



# MCS-ACTUATOR

**Model 3507B8115 - 120 VAC**

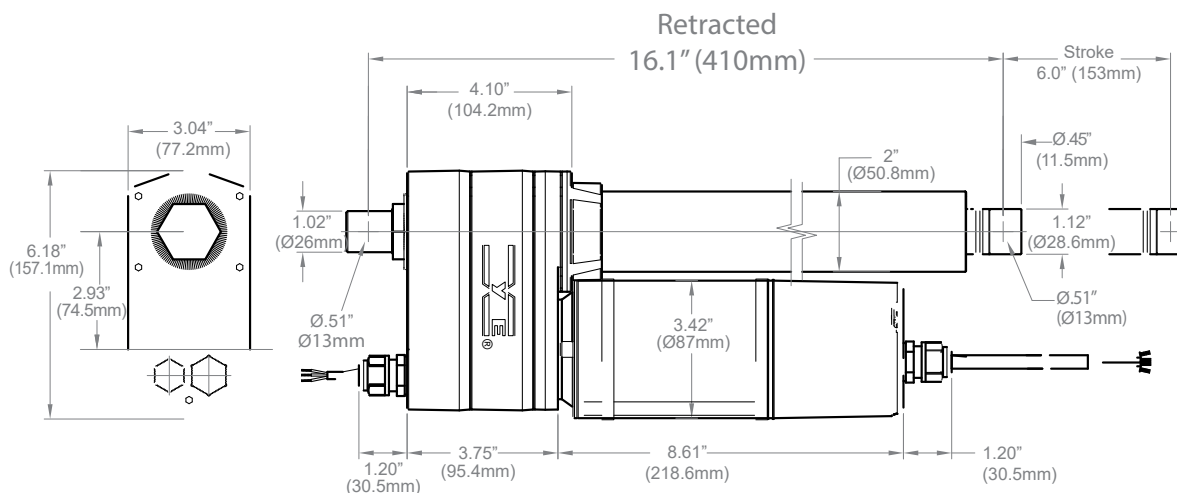
## Installation



### MCS-ACTUATOR replacement for Trane Centrifugal

When installing MCS Controls on a Trane Centrifugal that has a stepper actuator type like the UPC2 or newer, it will be necessary to change this to a pulse to open/close type actuator like the earlier Trane #2970 actuator.

Part Number (VAC)	Capacity N (lb)	Stroke mm (in)	Travel speed mm/sec (in/min)	Retracted (A) Mm (in)
MCS ACTUATOR (MA3507B8115)	3500 (787)	153 (6.0)	6 (14)	410 (16.1)



# MCS-ACTUATOR replacement for Trane Centrifugal

**Step 1** - Determine exact mounting for replacement or new install.



## ◀ TRANE UCP1

Shows Actuator piston fits between forks of bracket for moving the vane



## TRANE UCP2 ▶

Bracket for moving the vane is difference on UCP2, some installation modifications must be made when installing MCS-ACTUATOR on this model.



**DO NOT CONNECT TO MECHANICAL LOAD  
BEFORE VERIFYING FULL RANGE AND FUNCTION  
OF MCS-ACTUATOR PISTON MOVEMENT**



**Step 2** - With MCS-ACTUATOR unmounted, measure the movement of the chiller vane when opened and closed and mark these measurements down.

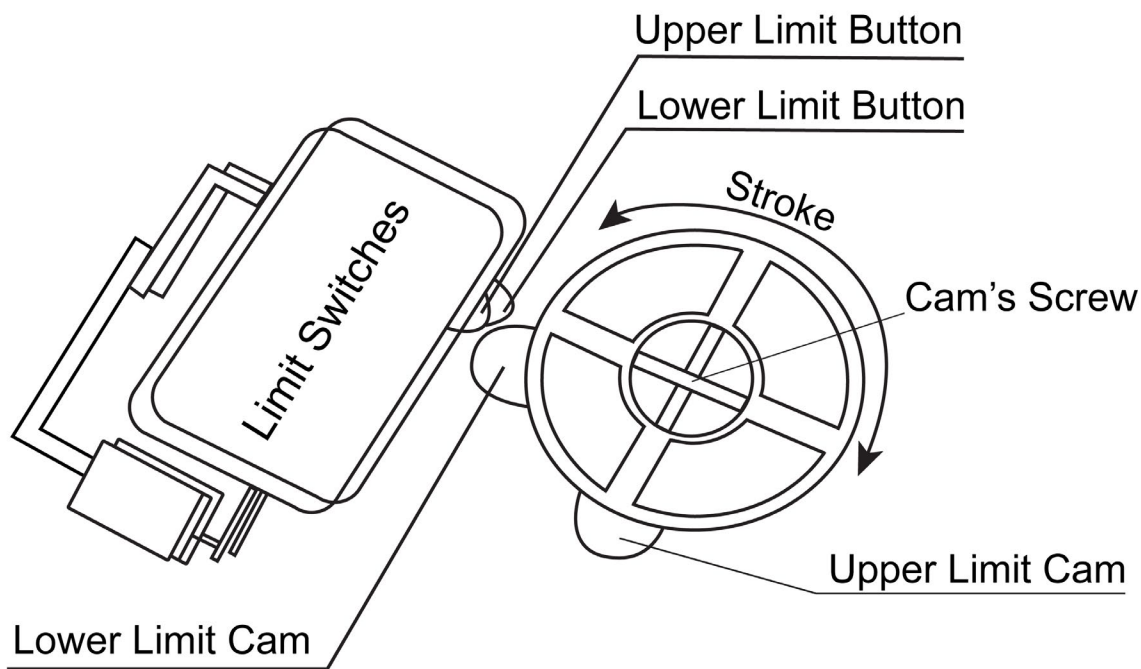
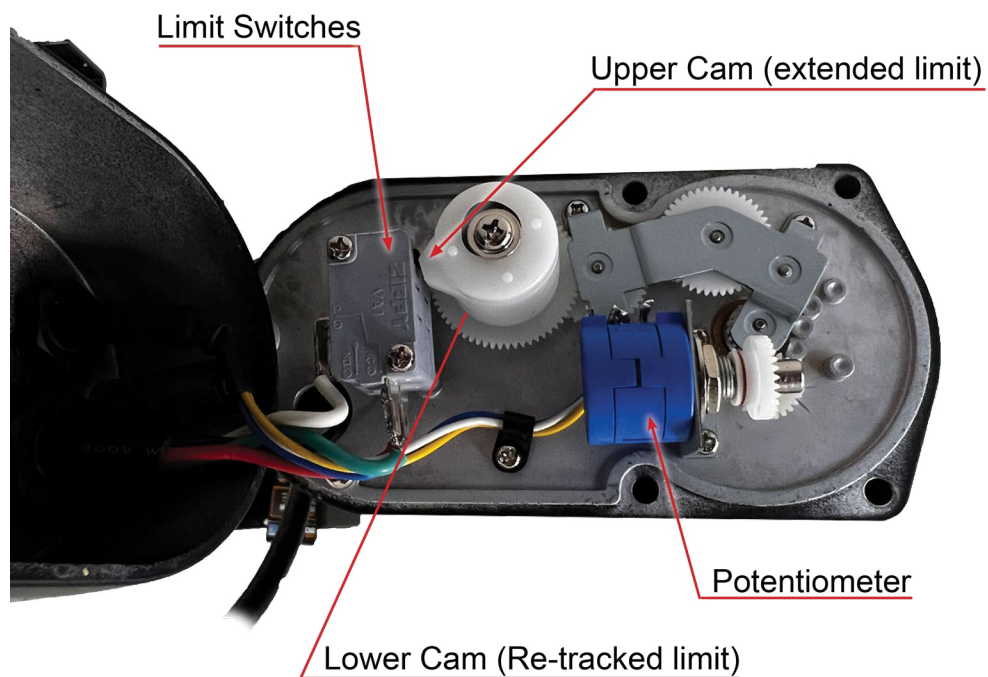
**Step 3** - Add Power to the MCS-ACTUATOR, measure the exact movement of the piston extension after the actuator is opened fully.

**Step 4** - Compare the measurement of the chiller vane with the MCS-ACTUATOR piston extension when opened.  
Example: MCS-ACTUATOR tube is extended 6 inches when stopped.  
Example: Chiller vane movement measurement is 5 inches when opened.

**Step 5** - MCS-ACTUATOR MUST BE CALCULATED SO THE PISTON EXTENSION MATCHES THE OPENING OF THE CHILLER VANE.

**Step 6** - If the MCS-ACTUATOR piston movement is set correctly for the opening of the chiller vane, proceed to installing and wiring the MCS-ACTUATOR, IF NOT, PROCEED TO RE-CALCULATE THE LIMIT SWITCHES ON THE NEXT PAGE.

Figure 1 and Figure 2 below illustrates the limit switch components. Exercise reasonable precaution when making adjustments. Do not contact the inner tube while the motor is running.



Limit Switch Schematic

MCS-Actuator includes limit switches, which are preset to the design limits of the unit. Customers who choose to make limit switch position adjustments must ensure the limits remain within the design limits of the actuator. Note that adjustments to the preset positions need to be made before the actuator is installed.



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OF PISTON MOVEMENT**



## **Limit Switch Adjustment**

Limit switches on MCS Actuators are pre-set. These instructions are provided in case the pre-set positions need to be adjusted.

1. If the actuator is not already fully retracted operate the actuator until the lower limit is reached and the motor stops. If satisfied with the actuator retract dimension as positioned continue to step # 3.
2. To finely position the retract stopping location rotate the inner actuator tube until the desired stopping location is achieved. Do not rotate the inner tube in a manner to position it lower than the minimum 16.1 inches from clevis hole to clevis hole as shown in the drawing.
3. From this point on until the actuator is fully mounted in the assembly it is important not to allow the inner tube to rotate. Allowing it to rotate will alter the retracted position location and require repeating steps 1 & 2.
4. To set the upper limit switch position, secure the inner tube from rotating by either gripping it by hand or slide a screwdriver through the clevis hole and lay the actuator down flat on a suitable work surface.
5. Electrically operate the actuator until the desired extend position is reached. If the actuator stops on its own before reaching the desired position the retract position may have been set too high and the physical travel limitations of the actuator have been exceeded. To rectify this problem repeat steps 1 & 2 or modify your assembly/structure geometry.
6. Once the desired extend position is reached. Use an Allen wrench to remove the five hex head cap screws at the base of the actuator housing, and gently pull the limit switch cover off the housing. It may be necessary to straighten the wires in the pigtail to facilitate separation. This will expose the limit switch assembly.
7. Loosen the Phillips-head screw on the limit switch cam assembly just enough so the upper cam can separate from the lower cam but not enough where the screw is removed completely. Adjust the upper cam by simultaneously pulling gently away from the lower cam and rotate until the upper cam just depresses the extend limit switch plunger. Take care not to disturb the position of the lower cam and gear.
8. Tighten the Phillips-head screw and if desired electrically retract the actuator to confirm the retracted dimension and extend to confirm the fully extended position. If satisfied continue to the next step otherwise repeat the instructions outlined above.
9. Carefully replace the cover, taking care that the gasket is in place and the wires remain tucked inside the cover. Tighten the five socket head cap screws to fasten the cover in place.
10. Once the limit switches are set, the unit can be mounted into the assembly.

## 2. Wiring Instructions for Motor and MCS SI



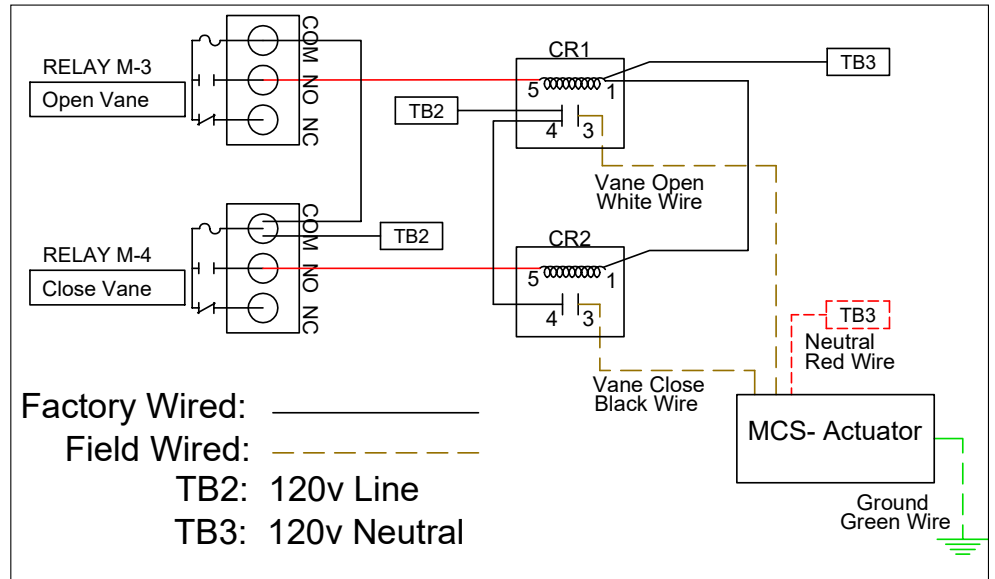
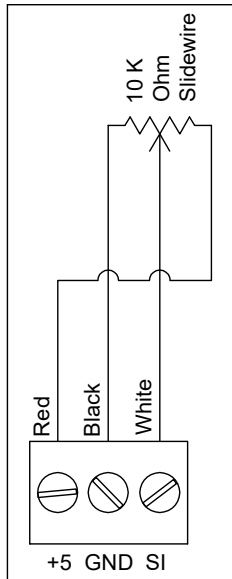
**Gray Wiring to MCS SENSOR**  
(15ft - Red, Black and White Wires)

**Black Coiled Cable (18ft - Red, Black and White cable)**  
to Power and Earth Ground



Wiring effective 02/11/2022

RED wire to +5  
BLACK wire to GND  
White wire to SI



### Revision History

Date	Author	Description
1-16-19	DMC	Actuator Feedback Calibration
05-15-2020	DEW	Setup for Limit Switch
12-01-2021	DEW	Added info for wiring and install
02-11-2022	DEW	Changed wiring
02-17-2022	DEW	Changes from John on wording

Any questions regarding this release, contact: [support@mcscontrols.com](mailto:support@mcscontrols.com)

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