



ACTUATOR REPLACEMENT STARTS WITH THE DAMPER, NOT THE ACTUATOR.

Most modern actuators can be replaced like-for-like since they function identically.

These have a replacement shown below.

Many old motors did not have internal springs and the spring and fusible link method varied.

Those require some investigation to be sure the replacement is performed correctly.

More important than motor-actuator characteristics is the UL Listing and Mounting. See Damper Mfgs.


Note that while replacement by electrical and torque characteristics may be straightforward, mounting may require special methods.

Use the UL555S tested area results given in damper OEM sections below.

Fire and Smoke Damper Actuator Replacement Checklist

* indicates necessary info

Please enter all information available:
 Damper Make.....Appx Dimensions w.....x h..... or area.....
 Actuator Voltage*.....Temperature required (250F, 350F)*.....Aux switches required*.....
 Old motor Make & Model.....Amperage.....Drive time.....Spring time.....Torque.....
 Digital photographs are helpful.



WARNING!

UL expects using instructions to ensure correct replacement is accomplished. For that reason, the make and model of damper are needed.

OLD EXTERNAL ACTUATOR SPRINGS MUST BE REMOVED. IN SOME CASES THERE WAS A SINGLE SPRING FOR ACTUATOR AND SHAFT SPRING FIRE FUNCTION. IN THOSE CASES, A NEW THERMAL SENSOR MAY NEED TO BE INSTALLED.

INSTRUCTIONS ARE AVAILABLE AND SHOULD BE USED.

Consult local AHJ - Fire Marshal or Building Official for permit requirements. In particular, where alarm wiring is touched, retesting is typically required.

TTT-VAT

Technical actuator characteristics can be found using the TTT-VAT questions:

- Temperature, Time, Torque, & Voltage should be equal or better.
- Amperage draw should be equal or lower to ensure a breaker is not overloaded.
- Damper and actuator should be Tested after installation. See Fire Marshal form in each instruction or at www.belimo.us/firesmoke

Codes

UL does not regulate replacement and repair.
 The local Fire Marshal or Building Official is the Authority Having Jurisdiction.
 NFPA 80 (fire) and NFPA 105 (smoke) require damper repair as soon as possible.
 Consult local AHJ for any permit requirements.
 Belimo has MEA for New York City and California State Fire Marshal Listing.
 MEA Tag rules are at www.belimo.us/firesmoke

Note that if any alarm or smoke control wires are touched, a retesting of the system is often required.

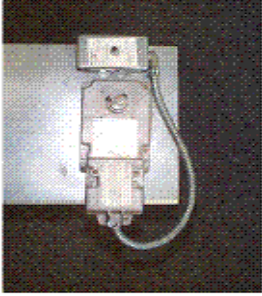
TTT-VAT
TEMPERATURE
TIME
TORQUE
VOLTAGE
AMPERAGE
TEST

It is recommended, not required, that replacement instructions with Fire Marshal form be submitted to AHJ.

For Belimo assistance -
 Mike Bracero at 203 749-3105 on East Coast
 Larry Felker at 775-857-4243 or 800 987-9042 x 5205 on West Coast

Barber Colman-Siebe--Invensys

MA2xx Series Regardless of manufacturer, investigate method to ensure no variations or field modifications occurred. Instructions must be used for all replacements.



Air Balance, Greenheck, Nailor NCA (Arlan), Ruskin (ALD), Safe-Air (Imperial)
 Remove external spring along with actuator. Dual spring or thermal sensor methods were used.
 Pottorff (Accurate)
 Single spring was typical. It must be disconnected and a new thermal sensor must be installed. Use HS10 or BAE165
 Prefco (Complete Spiral, Hugh Richards)
 OLD dampers are often special. Some internal mounts -- no replacement possible.
 Where McCabe Link was employed, derate actuator. See instructions below.

In general, MA22x was for <3 sq.ft. and MA23x was for 3 to max 6 sq.ft.

Model	Power	Volts	Replacement Options		Notes
MA220	23VA	120	FSLF120	Use FSNF if	In all cases, disconnect external motor spring. See specific damper manufacturer. The FSLF series replaces the MA220 series where direct coupled. The FSNF series replaces the MA230 series and MA220 series where linkages are required. However, the spring and fusible link set-up requires installation of a BAE165 or equal in some cases. Match voltages. Use FSLF for 4 sq.ft. and less. Use FSNF for 4 sq.ft. to 8 sq.ft. on Ruskin, 12 sq.ft. on others.
MA221	23VA	240	FSLF230	linkages are	
MA223	23VA	24	FSLF24	required.	
MA230	36VA	120	FSNF120		
MA231	36VA	240	FSNF230		
MA233	36VA	24	FSLF24		
MA240	No replacement.				
MA250	Same as MA220/230 series		FSLF	FSNF	

Model	Power	Torque-Stroke	Belimo Replacement	Note
MA318	24	60-180 stroke	FSNF24	May need linkage.
MA418	120	60-180 stroke	FSNF120	
MAxxx-500			Add -S	Aux switch

Honeywell These are straightforward like-for-like replacements.
 All damper manufacturers use them the same.

Model	Power	Torque	Model	Notes
ML4105A1000	120 CCW	50	FSLF120	FSLF120 should be used for dampers over 4 sq.ft. Where linkages are needed, use FSNF. This includes internal mount. Due to torque rating differences, the Belimo FSLF 30 in-lb achieves the same UL damper sq.ft. as the 50 in-lb ML4105.
ML4105B1009	120 CW	50	"	
ML4105C1008	230 CCW	50	"	
ML4105D1007	230 CW	50	"	
ML4115A1009	120 CCW	30	"	
ML4115B1008	120 CW	30	"	
ML4115C	230 CCW	30	FSLF230	
ML4115D	230 CW	30	"	
ML4115H	120 CW	30	FSLF120	
ML4115J	120 CCW	30	"	
ML4202	120 CW	20	"	
ML4302	120 CCW	20	"	
ML4702	230 CW	20	FSLF230	
ML4802	230 CCW	20	"	



ML4105, ML4114 MS4209 series

32003532-002 Aux Switch Package Use -S Belimo model.

ML8105A1006	24 CCW	50	FSLF24	FSLF120 should be used for dampers over 4 sq.ft. Where linkages are needed, use FSNF. This includes internal mount. Due to torque rating differences, the Belimo FSLF 30 in-lb achieves the same UL damper sq.ft. as the 50 in-lb ML8105.
ML8105B1005	24 CW	50	"	
ML8115A1005	24 CCW	30	"	
ML8115B1004	24 CW	30	"	
ML8115H	24 CW	30	"	
ML8115J	24 CCW	30	"	
ML8202	24 CW	20	FSLF24	
ML8302	24 CCW	20	"	



Honeywell Continued

Honeywell		Power		Torque	Belimo	Notes
MS4120F1006	No aux	120	.35A	175 in-#	FSAF120	If fast speed needed, use FSNF. UL555S listing of FSNF is 8 sq.ft. per actuator for Ruskin, 12 sq.ft. for others at 350F.
MS4120F1204	2 SPST	120	"	175 in-#	FSAF120-S	
MS4209F	.13A	120	CW	80in-#	FSNF120	
MS4309F	"	120	CCW	80in-#	"	
MS4620F1005	No aux	230		175 in-#	FSAF230	At 250F, FSNF is UL555S listed up to 16 sq.ft. for some. Use 12 sq.ft. max to be conservative.
MS4620F1203	2 SPST	230		175 in-#	FSAF230-S	
MS4709F	.09A	230	CW	80in-#	FSNF230	
MS4809F	"	230	CCW	80in-#	"	
MS8120F1002	No aux	24		175 in-#	FSAF24	FSAF Power: .09A @120V 11VA FSNF Power: .23A @120V 27VA
MS8120F1200	2 SPST	24		175 in-#	FSAF24-S	
MS8209F	7VA	24	CW	80in-#	FSNF24	



MS8309F	"	24	CCW	80in-#	FSNF24	
S2024-F	No aux	24		175 in-#		S = Halogen and silicone free wires.
S20230-F	No aux	230		175 in-#		S = Double insulated actuators.
S2024-F-SW2	2 SPDT	24		175 in-#		
SO230-F-SW2	2 SPDT	230		175 in-#		

Ruskin Models made by Honeywell

Belimo Replacement

Model		Power			< 4 sq.ft.	> 4 sq.ft.
H2000A/x	.18A	120	CCW	.15A	FSLF120	FSNF120 .23A
H2000B/x	"	120	CW	"	"	"
H2024A/x	16VA	24	CCW	5VA	FSLF24	FSNF24
H2024B/x	"	24	CW	"	"	"
H2230A/x	.13A	230	CCW	0.075A	FSLF230	FSNF230 .12A
H2230B/x	"	230	CW	"	"	"

32003532-002 Aux Switch Package Use -S model of proper voltage.
SPH2 Aux Switch

Siemens

Make & Model	in-lb	Power		Belimo Replacement		Notes
GGD121	140 in-lb	24		FSAF24	FSNF24	Belimo FSNF limited to 12 sq.ft.
GGD221		120		FSAF120	FSNF120	
GGD321		230		FSAF230	FSNF230	

Siemens spring is 108 in-lb with <10% reduction at elevated temperature.



GGD

GND12x.1x	50 in-lb	24V	20VA		FSLF24	Belimo FSLF is UL555S listed at
GND22x.1x		120V	.17A, 120V		FSLF120	the same sizes as the GND.
GND32x.1x		230V			FSLF230	Limit replacement to 4 sq.ft. or less.

.1U is up to 1" clamp. .3U is 1.05"

Electronic Fuse Link (24 Vac)

ASK79.165 165°F (74°C)		Thermal sensor. Opens at 165F.		BAE165 US
ASK79.212 212°F (100°F)		None. Call if needed.		
ASK79.250 250°F (121°C)		None. Call if needed.		
ASK79.350 350°F (177°C)		None. Call if needed.		



GND

Optional Two Auxiliary Switches Fixed 5° and 85°

Siemens is a direct copy of Belimo. No special investigation needed. Replace like for like since Siemens has internal spring.

Multiproducts

VERY IMPORTANT THAT THE FUSIBLE LINK METHOD BE EXAMINED. NOT ALL MP's CAN BE REPLACED.

First time replacement on any project is likely to require Belimo Product Management involvement.

MultiProducts motors were used in many different ways and investigation is necessary to ensure correct replacement. Damper manufacturer identification and digital photograph are necessary. As more models and methods of use are identified, this cross reference will be expanded in detail.

2920 + spring, etc.

MP2781-SQ	For direct coupled use FSLF.	Use FSNF where linkages needed.
MP2781-A-SQ	115 .24A run/.27A hold	Original was 1/4" shaft; replacement was 3/16" shaft.
MP2814-SQ	10 in-lb "A" model was CW rotation; plain was CCW	FSLF120 replaces both.
MP2814A-SQ	24 1.15A run/1.3A hold	(yes, true!)
	Inside clamp mounting or a shaft extension required.	
TB2001	Typically FSLF series. Use FSNF where linkages required due to space constraints.	
MP2781	See Ruskin use below. A kit is available.	
MP2585, 2986	FSLF120	See Greenheck Installation Instructions



ECM Out of business.
First time replacement on any project is likely to require Belimo Product Management involvement.

FSLF if direct coupled possible. FSNF if linkages needed. Digital photograph recommended.



View from outside.



View from inside.

The damper has to be rebuilt to some degree in most cases. The ECM's are not available. They may not be repaired.
Rather than starting with the motor here, go to the damper manufacturer and the instructions are available.
AHJ must be informed and approve before replacement. No UL555S methods possible.

Damper Manufacturers

See Belimo Instruction Sheets for actual installation details. If none at www.belimo.us/firesmoke, call and we will provide.

New York City - Belimo has MEA listing. See What's New at www.belimo.us/firesmoke

Accurate Specialty Metal (Pottorff, PCI) in New York. <http://asm-mech.com/>
SEE POTTORFF ALSO.

MA418	Two methods possible.	1) Fusible link with shaft spring.
		2) Thermal sensor.

Regardless of sensor and spring method, remove MA418 and install FSNF or FSAF. See Mounting Methods Guide if necessary. Use either FSNF or FSAF. One actuator per 12 sq.ft. section is recommended. FSNF is 350F. FSAF is 250F.

MA220, MA230, MA250	350°F	FSLF. 4 sq.ft. Note that while UL555S obtained with 3'w x 2'h (not 2'x3'), replacement use assumes more torque required.
		Use FSNF for larger dampers or if linkages are required.

The existing shaft spring must be disconnected and the fusible link replaced with a bolt. An HS10 Pottorff thermal sensor must be installed. Alternately a Belimo BAE165 sensor can be installed.
https://www.belimo.us/bellib/Fire_and_Smoke_Actuators/Pottorff_MA220_Field_Replacement.pdf

See Ruskin.



Air Balance

<http://www.airbalance.com/abimain.asp>

(American Warming, Arrow, Cesco, Louvers and Dampers)

Most Air Balance before 2002 need careful examination before replacement.

ECM & MultiProducts	FSLF 3 sq. ft. and smaller. FSNF where linkages needed.
	FSNF up to 12 sq.ft. 350°F

On older dampers there are major modifications required to replace actuators.
Special instructions needed for most. Call Belimo for details.

MA418	FSNF up to 12 sq.ft. 350°F. Thermal sensors not fusible links were used.
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A number of variations exist which are no longer manufactured:

- 1) Negator spring contacts the damper blade. Several sensor methods were used.
 - 2) Crankarm-pully has a spring built in. Also referred to as a "wrap spring clutch break."
 Both 1) and 2) were without jackshaft. See photo's below.
 - 3) MultiProducts with thermal sensors and jackshaft.
- The high temperature limit may be a fusible link or a fusible rod.

1) Negator spring contacts the damper blade.

From the outside of the duct, the actuator is visible. However, replacement sometimes involves rebuilding the linkage to the damper blade.
 ECM shown below.



External Motor.
 Call for information.

Fusible rod method. Replacement will require Belimo actuator and a parts kit from AB.
 Instructions should be submitted to AHJ before rebuilding damper.



Negator spring Fusible Rod

2) Crankarm-pully has a spring built in.

ECM and MultiProduct both used. No repair parts available.
 Variety of linkage methods were used. Call with model number for assistance.



Wrap-spring clutch break
 Remove and discard old clutch break, shaft, cable, fusible link, and hook.



Negator spring holder.
 (Spring missing.)
 Replace it or damper.

Above needs parts available from Air Balance. Call for information.

Completed Mounting



Modern Air Balance has a mounting plate for anti-rotation strap. Some older dampers have actuator hanging in air and a 4x4 box cover plate may be needed for anti-rotation.

3) MultiProducts with thermal sensors and jackshaft.

https://www.belimo.us/bellib/Fire_and_Smoke_Actuators/AB_MP_JackshaftedtoBelimoReplacementInstructions.pdf

Inside



Motor with external springs



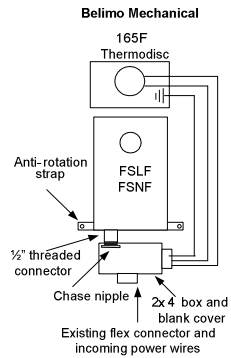
Full replacement instructions are available from Belimo.

HW ML4115, ML4202	FSLF
HW MS4209	FSNF

Direct coupled. Straightforward replacement.

https://www.belimo.us/bellib/Fire_and_Smoke_Actuators/AB_HW_ML&MS_Type_to_Belimo_FS_Replacement_Instructions.pdf

https://www.belimo.us/bellib/Fire_and_Smoke_Actuators/ReplacementHoneywellML4115andSimilarMotors.pdf



Arlan (NCA) NYC

See NCA.

<http://www.smacna-li.org/arlan.htm>

Complete Spiral Metals.

See Prefco.

MA220, MA230, MA250 FSLF120

Used 2 springs. Red arrows point at external one used for actuator. Internal one is preloaded and releases if fusible link melts.

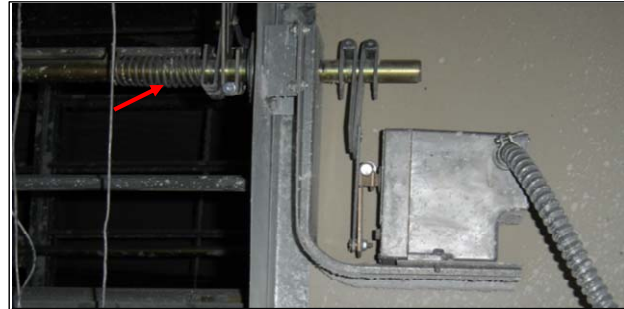
Remove old motor, bracket and spring. Belimo can then be direct coupled easily.



MA418, MA318 FSNF or FSAF

Application shown to right allows direct coupling. Linkages needed in some cases where space constraints dictate.

Disconnect electrical. Remove motor, linkage and bracket. Leave outboard bearing bracket. Mount Belimo and rewire.

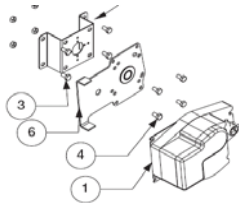
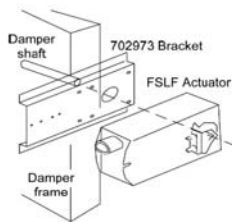


In general, oil-filled spring return motors like the MA418 are straightforward replacements. In this case, the Belimo FSNF or FSAF may be direct coupled. The shaft spring should be examined and exercised to prove it is still operational. The fusible link cannot be seen, however it should release the shaft spring.

ML4115, MS4202 | FSLF up to 24" x 24" for retrofit. (UL555S at 30" x 30" for new applications.)

https://www.belimo.us/bellib/Fire_and_Smoke_Actuators/ReplacementHoneywellML4115andSimilarMotors.pdf

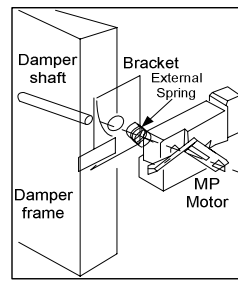
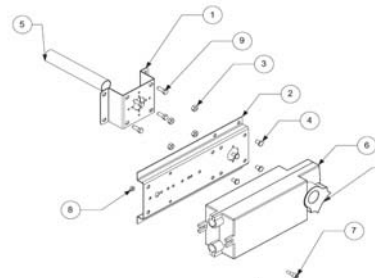
MS4120, GGD | FSNF or FSAF up to 12 sq.ft. | Optional bracket available from Greenheck rep.



MultiProducts | FSLF
| FSNF if linkages needed

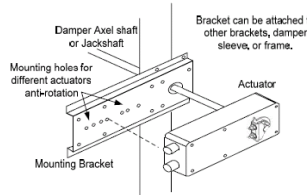
Belimo ZG-LMSA-1/2-5 is a 1/2" shaft extension 5" long.

Optional bracket available.



Crankarm is connected to the damper shaft. The Belimo may be direct coupled over the shaft. For short shaft mounting, place clamp of actuator between actuator and damper

651815 Bracket may be used. Belimo fits on same bracket.



Imperial NYC

<http://www.imperialdamper.com/products.html>

See Safe-Air

Leader

All	FSNF
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<http://www.leaderindustries.com/>

Leader has always used the 2 spring approach.
 Remove old motor, linkage, and spring. Install Belimo.
 Only FSNF UL Listed as of this file date.
 Examine damper and send digital photographs if more direction needed.
 Use various drawings in this document as references.

Lloyd Industries

All	FSNF
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<http://www.firedamper.com/>

Present damper using the dual spring approach so replacement straightforward.
 Only FSNF Listed.

Nailor

<http://www.nailor.com/OnlineCatalogs/CAC/CACCINTRO.pdf>

MultiProducts	FSLF or FSNF + linkage parts
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https://www.belimo.us/bellib/Fire_and_Smoke_Actuators/Nailor_MP_to_Belimo_FS_actuators.pdf

MA220, 230, 250	FSNF listed up to 36" x 48"
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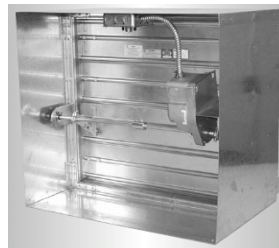
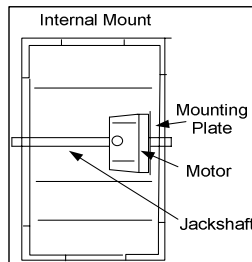
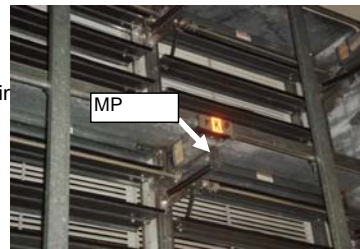
Modern dampers use the thermal sensor method for fire sensing.
 Actuator replacement is straightforward direct coupling.

ML4115	FSLF UL555S listed only 18" x 6".
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More to come.

ML4209	FSNF listed up to 36" x 48"
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MS4120	FSNF listed up to 36" x 48"
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Internal mount

External mount

For short shaft mounting of FSLFs, use the ZG-LMSA-1/2-5. 1/2" diameter, 5" long. It fits thru the FSLF and allows mounting. Or mount clamp internally.

https://www.belimo.us/bellib/Fire_and_Smoke_Actuators/ReplacementHoneywellML4115andSimilarMotors.pdf

NCA

<http://www.ncamfg.com/Catalog-PDFs/MotorsActuators-UL.pdf>

MA220, MA230, 250	FSLF
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MultiProducts	FSLF
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MA418	FSNF
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ML4115	FSLF	350F	24" x 24"
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MS4209	FSNF	250F	48" X 36"
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Modern dampers use the thermal sensor method for fire sensing.
 Actuator replacement is straightforward direct coupling.
 All older dampers used dual springs. The actuator spring must be removed or bypassed before installing a Belimo.
 The fusible link spring should be left as is.

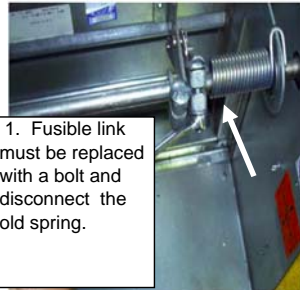
Larger access door may need to be installed.
 In some cases no actuator solution exists and damper must be replaced

NCA was purchased by Metal Industries who also owns Prefco.
 United Enertech has a franchise as does Complete Spiral Metals in NYC.

MA318 FSNF24 up to 12 sq.ft. 350°F and up to 16 sq.ft. 250°F.
 MA418 FSNF120 up to 12 sq.ft. 350°F and up to 16 sq.ft. 250°F.
 FSAF may be used for the same sizes if special features are needed.

MA220 MA220 was used up to 4 sq.ft. FSLF replaces it. See Siebe for voltages of part numbers.
 MA230 MA230 was used up to 6 sq.ft. FSNF replaces it. See Siebe for voltages of part numbers.
 Use FSNF if linkages needed where space constraints exist.

The existing shaft spring must be disconnected and the fusible link replaced with a bolt
 A thermal sensor must be installed. Link to instructions on Fire & Smoke Dashboard:
https://www.belimo.us/bellib/Fire_and_Smoke_Actuators/Pottorff_MA220_Field_Replacement.pdf



1. Fusible link must be replaced with a bolt and disconnect the old spring.

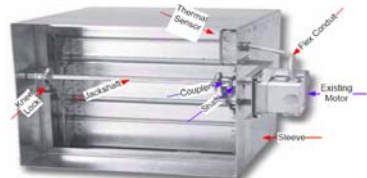


2. Then a new primary thermal sensor must be installed to control the actuator electrically.

Prefco

MA2xx Siebe	FSNF	5800MB2A	As of this file date, Prefco had not tested FSLF.
ML4115, ML4202	FSNF		Metal Industries owns both Prefco and NCA.
MultiProducts	FSNF	5800MB2X	

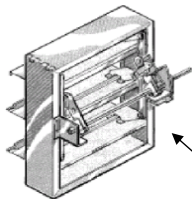
https://www.belimo.us/bellib/Fire_and_Smoke_Actuators/Prefco_Mod_5000_Actuator_Replacement.pdf



Replacement of the Honeywell actuator shown at left is straightforward. Remove old motor and install Belimo on shaft. Wire per Diagram 1 below.G663

Belimo replacements are available only for the PHL 5800 MB2 or MB3 actuator
 – all other 5800 series actuators must be replaced with new dampers.

Modern Prefco 5050/5150



On McCabe® Link dampers, the first time the actuator rotates open, it must tighten the shaft spring. Derate the actuator for that one time use.
 A single FSNF can be installed on 36" x 45" maximum section
 If an FSLF is used, install on maximum 18" x 18" damper.

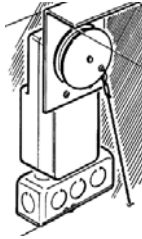
McCabe® Link

Prefco had a wide variety of mounting methods. Where a shaft existed, Belimo FSNF may be used. Where no shaft was present, refer to Prefco.

https://www.belimo.us/bellib/Fire_and_Smoke_Actuators/PrefcoMcCabeOldmotorReplacementBelimoFS_Series.pdf

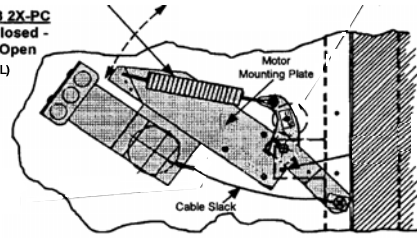
Prefco continued

5800 EMB
Belimo cannot replace the cable type.



Belimo cannot be used for this internal mount replacement. Only use Belimo on external shaft mount applications.

5800 EMB 2X-PC
(Power Closed - Spring Open)
(TYPICAL)



Internal mount

Ruskin

<http://www.ruskin.com/>

Ruskin models are mostly thermal sensor Older negator spring models are an exception.

MA318 FSNF24 up to 8 sq.ft. 350°F.

MA418 FSNF120 up to 8 sq.ft. 350°F

FSAF may be used for the same sizes if special features are needed.

https://www.belimo.us/bellib/Fire_and_Smoke_Actuators/MA220_Replacement_on_Ruskin.pdf

MA220 MA220 was used up to 3 sq.ft. FSLF

MA230 MA230 was used up to 6 sq.ft. FSNF

Use FSNF if linkages needed where space constraints exist.

See Siebe section for various voltages and models.

Remove defective actuator & external spring [1].

Straightforward replacement. CAUTION!

SPRING UNDER TENSION. WEAR EYE AND HAND PROTECTION.



Remove housing and spring under housing

ML4115	FSLF	4 sq.ft. 350F
MS4209	FSNF	4 sq.ft. to 8 sq.ft. at 350F
MS4120	FSNF	Max UL555S 8 sq.ft. at 350F
	FSAF	12 sq.ft. at 250F

GGD FSNF or FSAF at damper sizes above.

Phillips T150 FSNF or FSAF at damper sizes above.

https://www.belimo.us/bellib/Fire_and_Smoke_Actuators/Ruskin_Phillips_P150_to_Belimo_Instructions.pdf

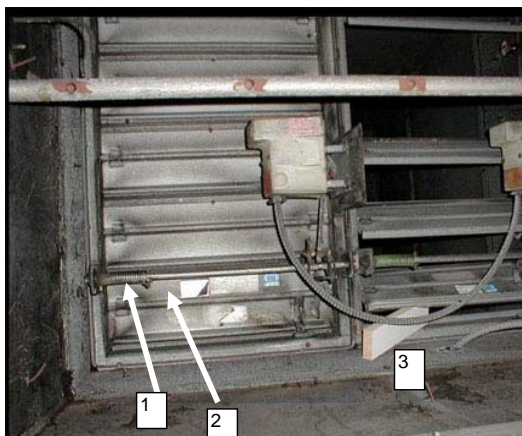
Check jackshaft spring [1] and fusible link [2]. Field modifications may

have been made on these old dampers changing factory function.

Motor has no spring. When power is removed, damper is driven closed by spring.

Thermal sensors were used to cut electrical power to the motor and allow spring to close damper.

Smoke function was by smoke detector.



Old spring [1] must be disabled. Loosen arms, let spring unwind on shaft. Disconnect. DANGER wear hand and eye protection. After releasing tension, drive shaft pin out to release spring. Slide spring down shaft and hold with pin.

Then install FSxx on old plate or use ZG-100 or equal to mount new actuator.

[3] Illegal 4 hour fusible link. Pencils, which at least burn faster, are also illegal. Remove.

Ruskin Continued

Use of instructions is required by UL when changing old actuators.



Left.

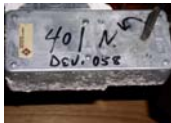
The above photograph exemplifies a not uncommon error. Obsolete Phillips P150 motor was used originally. Barber Colman MA418's were installed to replace the defectives P150's which did not have internal springs like more modern motors. However, the old shaft spring was left functioning. The MA418's have to do double duty by holding against their own internal spring as well as the old spring. The replacement motors fail prematurely.

Right.

The Belimo FSNF or FSAF can be mouted a number of ways. Use of a ZG-100 is shown here.

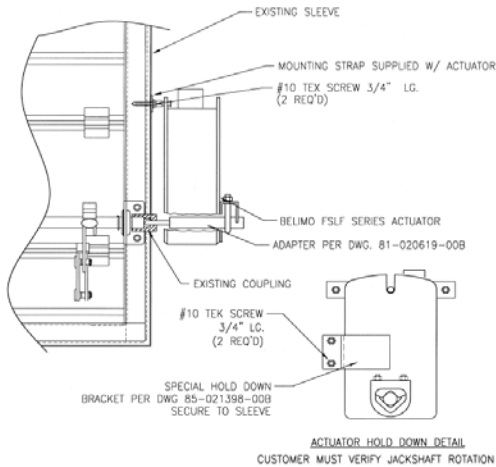
http://www.belimo.us/bellib/Accessories/Mechanical_Accessories.pdf
http://www.belimo.us/bellib/Application_Guides/Mounting_Methods.pdf

MP2781 MultiProducts	FSLF120/MP kit. Available from Ruskin only.
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Old negator springs must be present and working. If not, replace the damper.

In order to adapt the old MP motor with its .2" square male shaft end, a female socket was welded onto the damper shaft. The welded piece must stay on the shaft. A shaft adapter insert and actuator with hold down bracket is available from Ruskin.



Ruskin part number FSLF120/MP. This must be ordered from Ruskin or local Ruskin Representative. Go to www.ruskin.com for list.

RETROFIT KIT FOR CONVERTING AN EXISTING MP2781 TO FSLF SERIES ACTUATOR
 Kit contains actuator, shaft adaptor, hold down, and instruction sheet.

Use Wiring Diagram 1

https://www.belimo.us/bellib/Fire_and_Smoke_Actuators/RuskinDamperwithObsoleteMP2781_MultiProductsMotortoBelimoFSL



Fusible rod melts at 165°F.



Side view of 2781.



View after removal.

Safe-Air

<http://www.safeair-dowco.com/>

FSNF use limited to 4 sq.ft due to no UL testing.
FSLF not UL555S listed as of this file date.

Remove old motor and spring, install Belimo.
Knee-locks were sometimes very tight and may need adjustment.

Safe Air has always used the dual spring approach.

MultiProducts used extensively.	FSNF120
MA220, MA230, 250	FSNF120
MA418	FSNF120
MA318	FSNF24

A variety of Multiproducts motors were used also.
Send digital photographs if mounting assistance needed.
for use in determining instructions required.

United Enertech

<http://www.unitedenertech.com/news/>
NCA Type dampers.

Vent Products

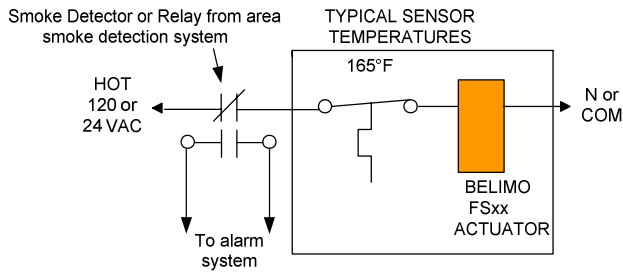
No longer making smoke or combination dampers. Call for information. Older models still exist.

Wiring Diagram 1

Wiring for primary sensor applications.

TYPICAL FIRE - SMOKE COMBINATION DAMPER WIRING

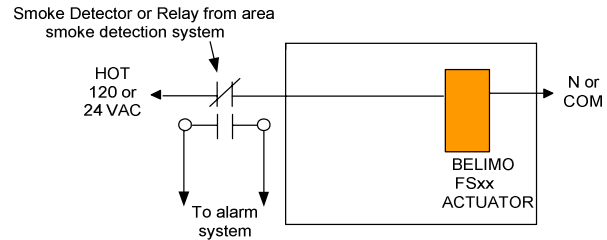
Electric thermal disc



Wiring Diagram 2

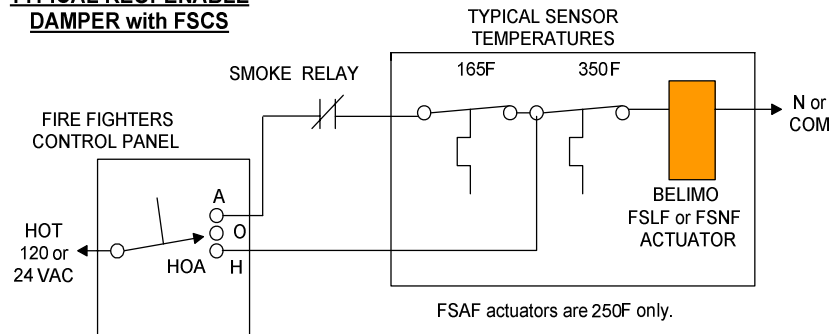
Wiring when fusible link is retained and old spring used.

Actuator has only a smoke function in this variation.
Example - Prefco with McCabe® Link



Wiring Diagram 3

TYPICAL REOPENABLE DAMPER with FSCS



If any alarm wiring is touched, contact Fire Marshal to determine if a retesting is required.
If any building structural changes are made, contact Building Official for permit & inspection

In some cases the actuator auxiliary switches are used for connection to status indication or to smoke control system.
Consult with AHJ to see if a retest is required when replacing defective motors.

For more information go to:

www.belimo.us/firesmoke

