

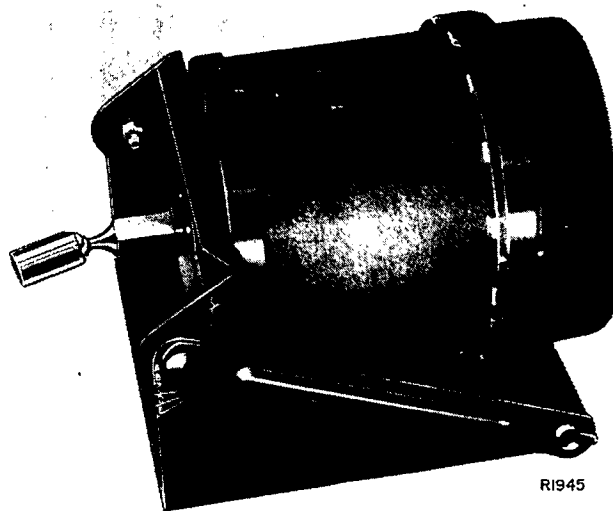
MODEL NUMBER MP904A & B

## General

The MP904A & B Pneumatic Damper Operators position damper blades controlling the volume of air flowing through a particular portion of a heating, cooling, or ventilating system. These damper operators are air pressure actuated by a proportional or two-position pneumatic control device.

## Features

- Rolling diaphragm operated.
- Universal mounting bracket permits internal installation on Honeywell Moduflow\* dampers or external installation on all makes of dampers provided with an extension shaft to the outside of the duct.



- Available with positive positioner to provide accurate positioning

under varying load conditions and sequence operation.

## Specifications

### MODELS

MP904A: Standard operator with positioner.

MP904B: Standard operator without positioner.

### MAXIMUM SAFE AIR PRESSURE

25 lb/in<sup>2</sup> (172 kPa).

### START POINT PRESSURE

MP904A: Relay adjustable from 3 to 10 lb/in<sup>2</sup> (20 to 70 kPa).

MP904B: Factory set at 2, 3 or 7 lb/in<sup>2</sup> (15, 20 or 50 kPa).

### OPERATING RANGE

See Tables 1 and 2.

### DAMPER LOAD RATING (See Tables 1 and 2)

Damper load ratings for Honeywell's Moduflow dampers are figured by totaling the "B" dimensions of all damper sections. (The "A" dimension is parallel and the "B" dimension is perpendicular to the blade length.)

### EXAMPLE:

A duct with an "A" dimension of 108 inches (2743 mm) and a "B" dimension of 36 inches (914 mm) uses three 36-

inch (914 mm) D640 damper sections for the "A" dimension, each having a "B" dimension of 36 inches (914 mm). Total the "B" dimension of all three sections: 3 x 36 = 108 in. (3 x 914 = 2743 mm). Table 2 shows one MP904B operator is adequate for modulating service, or two-position service, with a spring range of either 3 to 13 or 7 to 13 lb/in<sup>2</sup> (21 to 90 or 48 to 90 kPa). Two motors are required for a 2 to 7 lb/in<sup>2</sup> (14 to 48 kPa) spring range.

TABLE 1. MP904A MAXIMUM DAMPER LOAD RATING FOR "B" DIMENSIONS IN INCHES (MILLIMETERS)

Damper Model No.	Spring Pressure Range lb/in <sup>2</sup> (kPa)	Modulating Service		2-Position Service	
		Main Air Pressure		Main Air Pressure	
		18 lb/in <sup>2</sup> (90 kPa)	20 lb/in <sup>2</sup> (138 kPa)	18 lb/in <sup>2</sup> (90 kPa)	20 lb/in <sup>2</sup> (138 kPa)
D640, D641	7 to 13 (48 to 90)	152 (3861)	258 (6553)	186 (4724)	258 (6553)
D642, D643, D644, D645	7 to 13 (48 to 90)	152 (3861)	214 (5436)	152 (3861)	214 (5436)

TABLE 2. MP904B MAXIMUM DAMPER LOAD RATING FOR "B" DIMENSION IN INCHES (MILLIMETERS)

Damper Model No.	Spring Pressure Range lb/in <sup>2</sup> (kPa)	Modulating Service		2-Position Service
		Main Air Pressure 13 lb/in <sup>2</sup> (90 kPa)	Main Air Pressure 18 lb/in <sup>2</sup> (124 kPa)	Main Air Pressure 18 lb/in <sup>2</sup> (124 kPa)
D640, D641	2 to 7 (14 to 48)	74 (1880)*	74 (1880)*	74 (1880)
	3 to 13 (21 to 90)	---	112 (2845)	112 (2845)
	7 to 13 (48 to 90)	---	112 (2845)	186 (4724)
D642, D643, D644, D645	2 to 7 (14 to 48)	---	60 (1524)*	60 (1524)
	3 to 13 (21 to 90)	---	92 (2337)	92 (2337)
	7 to 13 (48 to 90)	---	92 (2337)	152 (3861)

\*2-Position Force Limitation.

**NET FORCE EXERTED (Including Tolerances)**

At 0 lb/in<sup>2</sup> (0 kPa), the operator shaft holds against the inner stop and resists an opposing force as follows:

MP904A: 150 lb (68 kg).

MP904B:

2 to 7 lb/in<sup>2</sup> (15 to 50 kPa) range: 40 lb (18 kg).

3 to 13 lb/in<sup>2</sup> (20 to 90 kPa) range: 62 lb (28 kg).

7 to 13 lb/in<sup>2</sup> (50 to 90 kPa) range: 150 lb (68 kg).

At 18 lb/in<sup>2</sup> (125 kPa), the operator shaft is held against the outer stop and resists an opposing force as follows:

MP904A: 90 lb (41 kg), 140 lb (64 kg).

MP904B:

2 to 7 lb/in<sup>2</sup> (15 to 50 kPa) range: 250 lb (103 kg).

3 to 13 lb/in<sup>2</sup> (20 to 90 kPa) range: 100 lb (45 kg).

7 to 13 lb/in<sup>2</sup> (50 to 90 kPa) range: 90 lb (41 kg).

**STROKE (Nominal)**

Operators are factory set at the following stroke:

MP904A and MP904B 3 to 13 lb/in<sup>2</sup> (20 to 90 kPa) range: 3-1/2 in. (89 mm).

Stroke stops not included but available.

MP904B 2 to 7 lb/in<sup>2</sup> (15 to 50 kPa) range: Factory set at 3-1/2 in. (89 mm); adjustable from 2 in. (51 mm) to 3-1/2 in. (89 mm). Stroke stops included.

MP904B 7 to 13 lb/in<sup>2</sup> (50 to 90 kPa) range: Factory set at 3 in. (76 mm); adjustable from 2 in. (51 mm) to 3-1/2 in. (89 mm). Stroke stops included.

**STROKE START ADJUSTMENT FEATURE (Optional)**

Stroke start adjustment nuts are available for all operators to increase start point of stroke travel up to 1/2 in. (13 mm).

**STROKE STOP ADJUSTMENT FEATURE (Optional)**

Stroke stop kits must be ordered separately for all operators except MP904B with a 2 to 7 or 7 to 13 lb/in<sup>2</sup> (15 to 50 or 50 to 90 kPa) range, which include stroke stop kit, to reduce full stroke travel up to 1.25 in. (32 mm) for the 2 to 7 lb/in<sup>2</sup> (15 to 50 kPa) range and .75 in. (19 mm) for the 7 to 13 lb/in<sup>2</sup> (50 to 90 kPa) range.

NOTE: Stroke adjustment influences start or finish pressures proportionately.

**AMBIENT TEMPERATURE RANGE**  
-20 to 160 F (-29 to 71 C).

**AIR CONNECTION**

1/8 NPT female (with factory installed push-on connector for 5/32 and 1/4 in. [4 and 6 mm] OD plastic).

**FINISH**

Cast aluminum and stainless steel.

**DIAPHRAGM**

Neoprene, rolling type.

**DIMENSIONS (Not Including Bracket)**

Length 8-7/8 in. (225 mm); diameter 6-1/4 in. (159 mm).

**MOUNTING**

Bracket and screws provided.

**ACCESSORIES**

Linkage to connect 1/2 in. (13 mm) OD shaft when externally mounted is provided with motor (Part No. 14002061-001).

Stroke start adjustment nuts; order separately, two (2), Part No. 304662.

Stroke stop adjustment kit; order separately Part No. 314959A.

Linkage for mounting operator internally on normally-open damper, Bag Assembly 14000693-001.

Linkage for mounting operator internally (normally-closed) when damper is not provided with appropriate mount. Bag Assembly 14000716-001.

Crank arm for 3/8 in. (9 mm) shaft, Part No. 26025B.

Crank arm ball joint, Part No. 315321-00062.

For additional accessories see Form No. 74-5413 "MP909A-D Operator Accessories".

**WHEN ORDERING, SPECIFY**

- Model Number
- Internal or External Mounting
- Pressure Range
- Accessories Needed

**Typical Operation**

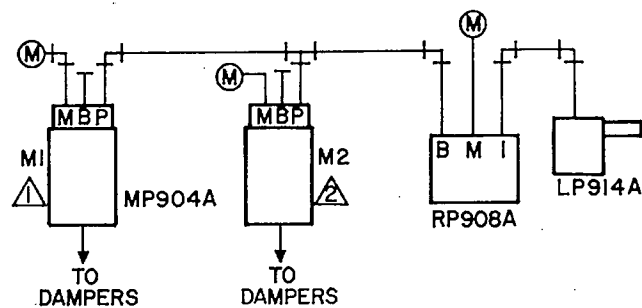
**MP904A (See Fig. 1)**

When used with a direct-acting controller to control dampers in sequence, an increase in temperature at the LP914 causes an increase in branch line pressure to damper actuators M<sub>1</sub> and M<sub>2</sub>. Damper actuator M<sub>2</sub> goes completely through its stroke before M<sub>1</sub> starts operating.

Full main air pressure is available to operators M<sub>1</sub> and M<sub>2</sub> at all times, providing positive damper positions corresponding to controller branch line pressures for all load conditions.

application, use the MP904B with 7 to 13 lb/in<sup>2</sup> (50 to 90 kPa) range. This makes the

MP904B compatible with the branch line pressure from the MP904A.



- ▲ SET FOR 5 LB/IN<sup>2</sup> (34 KPA) RANGE, 8 LB/IN<sup>2</sup> (55 KPA) START.
- ▲ SET FOR 5 LB/IN<sup>2</sup> (34 KPA) RANGE, 3 LB/IN<sup>2</sup> (21 KPA) START.

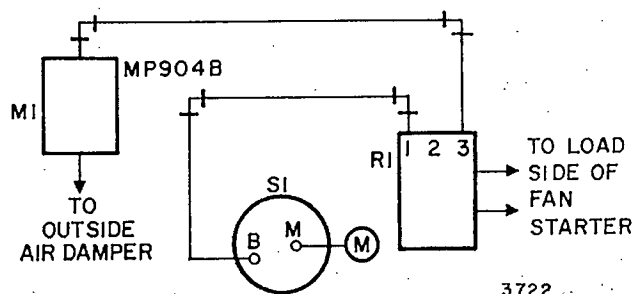
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**FIG. 1. MP904A USED WITH DIRECT ACTING CONTROLLER TO CONTROL DAMPERS IN SEQUENCE**

**MP904B (See Fig. 2)**

When used in a central fan system with a manual-positioning switch (S1) and an electric-pneumatic relay (R1), turning the fan on supplies pressure to the operator. The operator opens the damper to the position predetermined by the switch.

**NOTE:** When using MP904As (with positioner) and MP904Bs (without positioner) together in a multisection damper



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**FIG. 2. MP904B USED IN A CENTRAL FAN SYSTEM**