Volume Control Dampers
Remotely Operated Balancing Dampers
Fire/Smoke Dampers

Metropolitan Air Technology (MAT) was founded in 1992 to bring to market a newly patented concept in the field of manually controlled, remotely operated air volume balancing dampers. Remotely operated balancing dampers are required in installations where the balancing damper is inaccessible for direct manual adjustment due to drywall ceilings, high ceilings, or interference from other mechanical systems.

In response to market demand for a full commercial damper line, we expanded our offering with the introduction of a line of volume control dampers and a UL classified line of fire/smoke dampers.

We’re committed to the continuous evolution of our products, stellar customer service, and a top-notch quality management system. As a member of the U.S. Green Building Council, we monitor changes and trends within the green building industry to help identify our customer’s future needs and enhance our product development efforts.

Our products are manufactured in the USA and sold in North America and international markets.

MAT products are protected by US and International patents.
Remotely Operated Balancing Dampers

Roto-Twist® Cable Operated Dampers

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Electro-Balance® Battery Powered Dampers

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Specifications
Furnish cable operated remotely controlled volume dampers in inaccessible branch ducts feeding continuous linear diffuser plenums and where otherwise indicated. Reference architectural drawings for location of gypsum board ceilings. Rotary cable shall be routed through the ductwork and plenum and terminated at the diffuser or grille face. Dampers shall be adjustable through the diffuser face with standard tools (MAT Square Nut Driver or standard ¼” Hex. Nut driver). Galvanized steel radial damper shall be direct actuated by a plated steel rotary cable which is fixed at the damper end in an integral support bracket. Entire assembly shall be furnished as one piece for installation with no linkage adjustment required or miscellaneous small parts. Each unit shall be factory tested as a complete assembly prior to shipment. Accessible cable end shall be secured with a factory furnished nylon clamp, allowing maximum placement flexibility. Direct damper control shall be provided without sleeves, springs, or screw adjustments (that may loosen after ceiling closure). Cable operated dampers shall be Metropolitan Air Technology LLC Model #RT-150.

Available Sizes
• 6” (150mm) Ø
• 8” (200mm) Ø
• 10” (250mm) Ø
• 12” (300mm) Ø
• 14” (350mm) Ø
• 15” (375mm) Ø

Custom sizes available upon request
Model RT-150 Radial Damper

Roto-Twist® cable actuated damper drive system. Damper and rotary actuation cable are located inside the air stream.

Cable Position During Balancing

Cable Position After Balancing
Model RT-150 Radial Damper System
Roto-Twist® cable actuated damper drive system. Damper and rotary actuation cable are located inside the air stream.

Design & Materials
A. Galvanized steel radial damper spring loaded to hold position. Also available in aluminum and stainless steel.
B. Damper pivot pin accepts rotary actuation cable.
C. 6mm diameter plated steel rotary cable. (Cable lengths as required up to 4m max).
D. Nylon cable clamp furnished with 5/16" hex self-drilling screw for cable tip positioning.
E. Square rotary cable end adjusts with the MAT square nut driver or a ¼" standard hex nut driver (by others) Optional: flat-head screwdriver adjusted cable tip.

Features
- Furnished as one piece for easy installation.
- Minimum cable turn radius = 4".
- Max. recommended air velocity = 8.13 m/s (1600 ft/min).
- No linkages or cables to adjust.
- No small loose parts to get lost.
- Dampers may be installed in any plane.
Model RT-150 Installation & Operation Instructions
Roto-Twist® cable actuated damper drive system.

Receipt Inspection
Check material received against packing list. Claims resulting from factory errors must be made within 2 weeks after receipt of goods.

Installation
1. Radial dampers are furnished as one piece; however, make sure cable end is secure in damper pivot coupling prior to installing.
2. Secure damper in position in duct. Screw or rivet through bearing bracket side pieces—minimum 1 screw per side. Do not rack or distort damper. Dampers are ¼” undersized from nominal dimensions. Position damper to allow best cable run, avoiding tight turns, while keeping adjustment end in its preferred accessible position. Keep adjustment end of cable within 5” of accessible opening if possible. Alternately cables may be left hanging out of ceiling upon installation of air outlet and slipped back in after balancing.
3. Secure adjustment end as follows. Nylon clamp may be positioned anywhere along cable length to keep adjustment end in accessible position. Do not over tighten.

Operation
Dampers may be adjusted by applying a quality ¼” nut driver or hex socket to the male square adjustment end of the cable. Once set, dampers will hold their settings at all velocities up through the design limits. Operator nut drivers, with 6” shaft length, may be purchased from the manufacturer. Optional screwdrivers tipped units are adjusted with a thin blade screwdriver.

Maintenance
Properly installed Roto-Twist® dampers require no maintenance of any kind.
RT-150 Pressure Drop Chart
Roto-Twist® cable actuated damper drive system.

RT-150 Radial Damper Pressure Drop Curves - full open damper position

- 6" Damper
- 8" Damper
- 10" Damper
- 12" Damper
Model RT-100 Rectangular Damper

Roto-Twist® cable actuated damper drive system. Damper and rotary actuation cable are located inside the air stream. Damper is actuated through the diffuser or grille face.

Specification

Furnish cable operated remotely controlled volume dampers in inaccessible branch ducts feeding continuous linear diffuser plenums and where otherwise indicated. Reference architectural drawings for locations of gypsum board ceilings. Rotary cable shall be routed through the ductwork and plenum and terminated behind the diffuser or grille face. Dampers shall be adjustable at the diffuser face with standard tools (MAT Square Nut Driver or standard ¼” Hex Nut driver). Dampers shall be constructed of 18 gauge extruded aluminum and shall be pivot actuated by an unsheathed plated steel rotary cable which is supported at the damper end in an extruded aluminum-bearing bracket. Cable & bearing bracket assembly shall snap-fit into damper for one piece installation with no linkage adjustment required or miscellaneous small parts. Accessible cable end shall be secured with a factory furnished nylon clamp to ensure positive location behind the diffuser or grille. Direct damper control shall be provided without sleeves, springs, or screw adjustments (that may loosen after ceiling closure). Damper sizes greater then 22” x 18” (600mm x 450mm) shall be fabricated in sections with one cable operator per section. Cable operated dampers shall be Metropolitan Air Technology Model RT-100.

Available Sizes

- 6” x 4” (150mm x 100mm )
- 6” x 6” (150mm x150mm )
- 8” x 6” ( 200mm x150mm )
- 10” x 4” ( 250mm x100mm )
- 10” x 6” ( 250mm x150mm )
- 10” x 8” ( 250mm x 200mm)
- 12” x 4” ( 300mm x100mm )
- 12” x 8” ( 300mm x200mm)
- 12” x 5” ( 300mm x125mm )
- 12” x 6” ( 300mm x150mm )
- 14” x 6” ( 350mm x150mm )
- 14” x 8” ( 350mm x200mm)
- 16” x 6” ( 400mm x150mm )
- 16” x 8” ( 400mm x200mm )
- 18” x 6” ( 450mm x150mm )
- 22” x 6” ( 550mm x150mm )

Max size – 22” x 18” (550mm x 450mm). Sectional dampers available for larger dampers. Custom sizes available upon request.
Model RT-100 Rectangular Damper

Roto-Twist® cable actuated damper drive system. Damper and rotary actuation cable are located inside the air stream.

Cable Position During Balancing

Cable Position After Balancing
RT-100 Damper System
Roto-Twist® cable actuated damper drive system.

Design & Materials
A. Extruded aluminum opposed blade damper – spring loaded to hold setting.
B. Damper pivot pin accepts rotary cable.
C. Extruded aluminum bearing bracket snap-fits to frame for one piece installation.
D. Cable lengths as required up to 60’. 1/4” brass Plated steel rotary cable.
E. Nylon cable clamp for field furnished with 5/16” hex self-drilling screw.
F. Male square rotary cable end adjusts with a Standard hex nut driver (by others) or the MAT square nut driver. Optional: thin-blade screwdriver adjusted cable tip.

Features
- Furnished as one piece for easy installation.
- Minimum cable turn radius = 4”.
- Max. recommended air velocity = 8.13 m/s (1600 ft/min)
- No linkages or cables to adjust.
- No small loose parts to get lost.
- Dampers may be installed in any plane.
Model RT-100 Installation & Operation Instructions
Roto-Twist® cable actuated damper drive system.

Receipt Inspection
Check material received against packing list. Claims resulting from factory errors must be made within 2 weeks after receipt of goods.

Installation
1. Rectangular units are shipped in 2 pieces. To assemble: Slip the male square end of the rotary cable assembly into the female square opening in the damper pivot while snapping the angle bracket on to the damper frame using a heel to toe motion. Be sure to align the cable straight into the pivot hole. Rotate the cable using a ¼” hex nut driver or the MAT square nut driver to make sure the damper opens and closes fully.
2. Secure the damper in position in the duct. Screw or rivet through the channel frame or end plates as required. Preferred installation method is via #10 speed screws. Do not rack or distort the damper. Damper is ¼” undersized from nominal dimensions. At normal branch duct velocities damper may be installed in any plane or aspect ratio with operator pivot on any side. Position damper to allow best cable run, avoiding tight turns, while keeping adjustment end in its preferred accessible position. Keep adjustment end of cable within 5” of accessible opening if possible. Alternately cables may be left hanging out of ceiling upon installation of air outlet and slipped back in after balancing.
3. Secure the adjustment end of the cable using the nylon clamp. The clamp may be positioned anywhere along cable length to keep adjustment end in accessible position. Do not over tighten. Cable should rotate easily inside the clamp.

Operation
Dampers may be adjusted by applying a MAT Square Nut driver or a ¼” hex socket to the male square adjustment end of the cable. Once set, dampers will hold their settings at all velocities up through the design limits. MAT Square Nut Drivers with 5” shaft length may be purchased from the manufacturer. Optional screwdriver tip units are adjusted with a thin bladed screwdriver.

Maintenance
Properly installed Roto-Twist® dampers require no maintenance of any kind.
RT-100 Pressure Drop Chart
Roto-Twist® cable actuated damper drive system.

RT-100 DAMPER PRESSURE DROP DATA

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<td>903</td>
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<tr>
<td>1200</td>
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<tr>
<td>1499</td>
<td>0.25</td>
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<tr>
<td>1800</td>
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- 10 x 6
- 16 x 6
- 12 x 12
- 18 x 10
- 20 x 20
Specification
Furnish cable operated remote controlled volume dampers in branch ducts located in inaccessible ceilings and where otherwise indicated. Reference architectural drawings for locations of gypsum board, spline etc. ceilings. Damper frame (sleeve) construction shall be 20 gage (.91mm) roll formed, galvanized steel with beads at each end. Blades shall be 20 gage (.91mm) round single piece design, mechanically attached to the axle with support brackets. Axles shall be 3/8” (9.52mm) square plated steel with molded synthetic bearings housed in the damper frame. Damper control shaft shall be 3/8” (9.52mm) square shaft, minimum of 3” (75mm) long. Dampers shall be adjusted via a universal worm gear drive that is actuated by a rotary cable which is captured at the damper end by a shaft coupling integral to the worm gear assembly. The rotary cable shall be terminated at the ceiling line or in a wall opening and concealed inside a ceiling/wall cup (MAT Model # RT-CCS, RT-CCR or RT-CCM) that is secured to the ceiling (or wall) framing. The cups shall provide a secure, unobtrusive appearance flush with the finished wall or ceiling. The universal damper drive shall be furnished as a complete assembly with universal mounting capabilities to accommodate damper shaft sizes from ¼”-3/8” square (6mm – 9.5mm), or ¼”-1/2” (6mm-12.7mm) round. The drive unit construction shall consist of a 14 gage galvanized mounting bracket, an aluminum worm and worm gear, and a black oxide coated steel drive shaft/cable coupling. Cable support clamps shall be factory furnished as required by the cable length. Ceiling Cup, rotary cable, and worm gear (damper drive system) shall be furnished as one piece for installation in the field with no linkage adjustment required or miscellaneous small parts. Direct, two-way damper control shall be provided without sleeves, springs, or screw adjustments (that may loosen after ceiling closure). Cable operated dampers shall be Metropolitan Air Technology LLC Model #RT-250 with RT-WGA worm gear drive and RT-CCR, RT-CCM, or RT-CCS Ceiling Cups

Model RT-250 Round Damper & RT-WGA Universal Damper Drive
Roto-Twist® cable actuated damper drive system. Damper drive and cable are located outside the air stream with cable termination in a wall or ceiling.
Model RT-250 Round Damper & RT-WGA Universal Damper Drive  

Roto-Twist® cable actuated damper drive system. Damper drive and cable are located outside the air stream with cable termination in a wall or ceiling.

Balancing

After Balancing

Represented by: 6235 South Oak Park Avenue Chicago, IL 60638 USA
Toll free: 800.585.7686 +1.708.552.4040
Fax: +1.708.594.0396 www.metairtech.com
RT-250 Damper System
Roto-Twist® cable actuated damper drive system.

Design & Materials
A. 20 gage galvanized steel with rolled bead. Stiffeners reinforced blade, self lubricating bearings.
B. RT-WGA Universal Damper Drive
C. ¼” plated steel actuation cable.
D. RT-CCM Round Miniature Ceiling Cup.
E. RT-CCM Cap 1” Dia. UL 94-V0 white nylon.

Other Cable Termination Options
• RT-CCR Round Ceiling Cup
• RT-CCS Rectangular Ceiling/Wall Cup
• RT-MB Mounting Bracket
• RT-CCE Environmental Control Box
• RT-CCD Surface Mount Box
• MAT-1003 Angle bracket

Available Sizes**
• 4 (100mm) Ø
• 5 (125mm) Ø
• 6” (150mm) Ø
• 7” (175mm) Ø
• 8” (200mm) Ø
• 10” (250mm) Ø
• 12” (300mm) Ø
• 14” (350mm) Ø
• 15” (375mm) Ø
• up to 20” (500mm)

**Dampers are also available in aluminum and stainless steel for all sizes
RT-WGA Universal Damper Drive
Roto-Twist® cable actuated damper drive system.

Design & Materials
A. 14 gage galvanized steel mounting bracket
B. Machined aluminum worm gear
C. Machined aluminum worm
D. Black oxide coated steel shaft/coupling
E. Brass plated steel rotary actuation cable
F. Set screws
Model RT-250 Installation & Operation Instructions
Roto-Twist® cable actuated damper drive system.

Receipt Inspection
Check material received against packing list. Claims resulting from factory errors must be made within 2 weeks after receipt of goods.

Installation
1. Prior to installing damper in duct, check to make sure blades operate freely with no binding or restriction.
2. Screw or rivet damper to duct. Make sure that fasteners do not interfere with blade operation and that damper is not racked.
3. Adjust worm gear rotation so that set screws will be accessible when in position. Align square shafts so as to catch set screws directly on flats. Set screws are 90° opposed.
4. Slip worm gear assembly over shaft. Tighten (2) set screws onto damper shaft with 1/8" Allen key, then secure to duct or mounting plate. Assembly mounts horizontally or vertically as required for best cable run. Test for free operation by rotating cable. Do not attempt to rotate worm gear by pushing on damper blade.
5. Support cables as required at all changes in direction and at 3 foot intervals. Use retaining clips furnished. No draping – cables should be taut or nearly so. 4" minimum turn radius. Clips should be installed with a loose fit to allow cable rotation. The longer the cable and the larger the damper – the more attention should be paid to cable support.
6. Fasten ceiling / wall cup or other termination to framing. For RT-CCS, RT-CCR, and RT-CCM see instructions provided.
7. TEST individual damper operation to evaluate cable support scheme prior to ceiling close-up.
8. Install cover plate after ceiling installation and air system balancing, but prior to painting.

For cable lengths over 36"
Support cables as required at all changes in direction and at 3’ intervals. Use retaining clips furnished. Cable must be supported as follows:
- 4” minimum operating radius
- No draping – cable should be taut or nearly so

1/4” cable clamps are furnished for all dampers assemblies in quantities required for cable support.

The longer the cable and the larger the damper – the more attention should be paid to cable support.

Test individual damper operation to evaluate cable support scheme prior to ceiling / duct close-up.

For longer cable runs (e.g. > 30’) it may be more convenient to support the cable in a conduit rather than installing cable clamps at 3’ intervals (field option).

Operation
1. Damper may be adjusted with a quality ¼” nut driver or hex socket wrench. (Thin blade screwdriver if ordered.) Often cable end may be pulled out several inches to ease adjustment.
2. Worm gear has a 20-1 ratio; therefore a 90 degree blade rotation requires five (minimum) complete rotations.
3. Damper will hold set position. Gear design will not allow reverse movement from the damper end.

Maintenance
Properly installed ROTO-TWIST® dampers require no maintenance of any kind.
Roto-Twist® Cable Selection Notes
Roto-Twist® cable actuated damper drive system.

1. Cable should be ordered in discrete lengths, but can be field cut to shorten if excess cable length is too great to be “used up” (see #4). Intermediate mounting clamps are provided for all cables over 3’.
2. Minimum turn radius to maintain full torque safety factor is 4”. However, this is not important with short (2-3) cables.
3. When in doubt, cable should be ordered to the longer length as “using up” extra length is easier and cheaper than adding an extra piece.
4. Extra cable length may be “used up” as follows:
   - Mount RT-100 with cable connection at the top instead of bottom.
   - Run cable with wider turns or additional turns.
   - Route cable from side-to-side in slot plenum- not directly down from the plenum inlet.

5. Short cables may be extended in most cases by purchasing a coupling and additional length.
6. Bulk cable (on a reel) can be purchased, cut to length in the field, and coupled to MAT dampers and ceiling cups. However since cables are factory mounted to certain dampers and ceiling cups, minimum lengths will need to be known at the time of order. Consult MAT for assistance when ordering any bulk cable.
7. Keep in mind the location of the RT-100 cable-to-damper connection point, particularly on Seal Plate applications, sectionals, and dampers over 18” long (side). Factory lay-out assistance is always available. Don’t be short.
Specification
Furnish cable operated remotely controlled volume dampers in branch ducts and branch take-offs located in inaccessible ceilings and where otherwise indicated. Damper frame construction shall be 1.6mm thick galvanized steel hat shaped channel design with corner braces. Linkage shall be concealed in the frame. Damper blades (opposed or parallel action) shall be 1.6mm thick galvanized steel single skin, 150mm wide with 3 full-length longitudinal V grooves. Axles shall be 12.7mm Dia. plated steel hex that rotate inside molded synthetic bearings. Bearings shall be supported inside extruded holes in the damper frame. Damper control shaft shall be 3/8” (9.52mm) square shaft, minimum of 3” (75mm) long. Dampers shall be adjusted via a universal worm gear drive that is actuated by a rotary cable which is captured at the damper end by a shaft coupling integral to the worm gear assembly. The rotary cable shall be terminated at the ceiling line or in a wall opening and concealed inside a ceiling/wall cup (MAT Model # RT-CCS, RT-CCR or RT-CCM) that is secured to the ceiling (or wall) framing. The cups shall provide a secure, unobtrusive appearance flush with the finished wall or ceiling. The universal damper drive shall be furnished as a complete assembly with universal mounting capabilities to accommodate damper shaft sizes from ¼”-3/8” square (6mm – 9.5mm), or ¼”-1/2” (6mm-12.7mm) round. The drive unit construction shall consist of a 14 gage galvanized mounting bracket, an aluminum worm and worm gear, and a black oxide coated steel drive shaft/cable coupling. Cable support clamps shall be factory furnished as required by the cable length. Ceiling Cup, rotary cable, and worm gear (damper drive system) shall be furnished as one piece for installation in the field with no linkage adjustment required or miscellaneous small parts. Direct, two-way damper control shall be provided without sleeves, springs, or screw adjustments (that may loosen after ceiling closure). Cable operated dampers shall be Metropolitan Air Technology LLC Model #RT-200 with RT-WGA worm gear drive and RT-CCR, RT-CCM, or RT-CCS Ceiling Cups.

Model RT-200 Rectangular Damper & RT-WGA Universal Damper Drive

Roto-Twist® cable actuated damper drive system. Damper drive and cable are located outside the air stream with cable termination in a wall or ceiling.
Model RT-200 Rectangular Damper & RT-WGA Universal Damper Drive  Roto-Twist® cable actuated damper drive system.

Damper drive and cable are located outside the air stream with cable termination in a wall or ceiling.

During Balancing

After Balancing
RT-200 Rectangular Damper System
Roto-Twist® cable actuated damper drive system.

Design & Materials
A. 1.6mm gage galvanized steel channel frame with braced corners.
B. 1.6mm gage galvanized steel blades opposed blade design (parallel blades optional).
C. Self-lubricated synthetic bearings.
D. RT-WGA Universal Damper Drive.
E. RT-CCM Round Miniature Ceiling Cup*
F. Max velocity = 1500 FPM.
Dampers 300mm high and less -20 gauge single blade design with 20 gauge straight frame

Other Cable Termination Options
• RT-CCR Round Ceiling Cup
• RT-CCS Rectangular Ceiling/Wall Cup
• RT-CCM Round Miniature Ceiling Cup
• RT-MB Mounting Bracket
• RT-CCE Environmental Control Box
• RT-CCD Surface Mount Box
• MAT-1003 Angle bracket

Available Sizes**
• 6” x 6” (150mm x150mm)
• 8” x 6” (200mm x150mm)
• 10” x 4” (250mm x100mm)
• 10” x 6” (250mm x150mm)
• 10” x 8” (250mm x 200mm)
• 12” x 4” (300mm x100mm)
• 12” x 8” (300mm x 200mm)
• 12” x 5” (300mm x125mm)
• 12” x 6” (300mm x150mm)
• 14” x 6” (350mm x150mm)
• 14” x 8” (350mm x 200mm)
• 16” x 6” (400mm x150mm)
• 16” x 8” (400mm x200mm)
• 18” x 6” (450mm x150mm)
• 24” x 6” (600mm x150mm)

Max size: 48” x 48” (1219mm x 1219mm). Large sectional dampers available to 96” x 96”

**Aluminum slim line style dampers available to 22”x18”, Stainless steel dampers available in all sizes
RT-WGA Universal Damper Drive
Roto-Twist® cable actuated damper drive system.

Design & Materials
A. 14 gage galvanized steel mounting bracket
B. Machined aluminum worm gear
C. Machined aluminum worm
D. Black oxide coated steel shaft/coupling
E. Brass plated steel rotary actuation cable
F. Set screws
Model RT-200 Installation & Operation Instructions
Roto-Twist® cable actuated damper drive system.

**Receipt Inspection**
Check material received against packing list. Claims resulting from factory errors must be made within 2 weeks after receipt of goods.

**Installation**
1. Prior to installing damper in duct, check to make sure blades operate freely with no binding or restriction.
2. Screw or rivet damper to duct. Make sure that fasteners do not interfere with blade operation and that damper is not racked.
3. Adjust worm gear rotation so that set screws will be accessible when in position. Align square shafts so as to catch set screws directly on flats. Set screws are 90° opposed.
4. Slip worm gear assembly over shaft. Tighten (2) set screws onto damper shaft with 1/8” Allen key, then secure to duct or mounting plate. Assembly mounts horizontally or vertically as required for best cable run. Test for free operation by rotating cable. Do not attempt to rotate worm gear by pushing on damper blade.
5. Support cables as required at all changes in direction and at 3 foot intervals. Use retaining clips furnished. **No Draping** – cables should be taut or nearly so. 4” minimum turn radius. Clips should be installed with a loose fit to allow cable rotation. The longer the cable and the larger the damper – the more attention should be paid to cable support.
6. Fasten ceiling / wall cup or other termination to framing. For RT-CCS, RT-CCR, and RT-CCM see instructions provided.
7. Test individual damper operation to evaluate cable support scheme prior to ceiling close-up.
8. Install cover plate after ceiling installation and air system balancing, but prior to painting.

**Operation**
1. Damper may be adjusted with a quality ¼’ nut driver or hex socket wrench. (Thin blade screwdriver if ordered.) Often cable end may be pulled out several inches to ease adjustment.
2. Worm gear has a 20-1 ratio; therefore a 90 degree blade rotation requires five (minimum) complete rotations.
3. Damper will hold set position. Gear design will not allow reverse movement from the damper end.

**Maintenance**
Properly installed ROTO-TWIST® dampers require no maintenance of any kind.

**For cable lengths over 36”**
Support cables as required at all changes in direction and at 3’ intervals. Use retaining clips furnished. Cable must be supported as follows:
- 4” minimum operating radius
- **No draping** – cable should be taut or nearly so

1/4” cable clamps are furnished for all dampers assemblies in quantities required for cable support.

The longer the cable and the larger the damper – the more attention should be paid to cable support.

**Test** individual damper operation to evaluate cable support scheme prior to ceiling / duct close-up.

For longer cable runs (e.g. > 30’) it may be more convenient to support the cable in a conduit rather than installing cable clamps at 3’ intervals (field option).
Roto-Twist® Cable Selection Notes
Roto-Twist® cable actuated damper drive system.

1. Cable should be ordered in discrete lengths, but can be field cut to shorten if excess cable length is too great to be “used up” (see # 4). Intermediate mounting clamps are provided for all cables over 3’.
2. Minimum turn radius to maintain full torque safety factor is 4”. However, this is not important with short (2-3) cables.
3. When in doubt, cable should be ordered to the longer length as “using up” extra length is easier and cheaper than adding an extra piece.
4. Extra cable length may be “used up” as follows:
   • Mount RT-100 with cable connection at the top instead of bottom.
   • Run cable with wider turns or additional turns.
   • Route cable from side-to-side in slot plenum- not directly down from the plenum inlet.
5. Short cables may be extended in most cases by purchasing a coupling and additional length.
6. Bulk cable (on a reel) can be purchased, cut to length in the field, and coupled to MAT dampers and ceiling cups. However since cables are factory mounted to certain dampers and ceiling cups, minimum lengths will need to be known at the time of order. Consult MAT for assistance when ordering any bulk cable.
7. Keep in mind the location of the RT-100 cable-to-damper connection point, particularly on Seal Plate applications, sectionals, and dampers over 18” long (side). Factory lay-out assistance is always available. Don't be short.
RT-200 Pressure Drop Chart
Roto-Twist® cable actuated damper drive system.
RT-CCM Mini Ceiling Cup  Roto-Twist® cable actuated damper drive system. Used for cable termination in a wall or ceiling.

Specification

Furnish a metal mounting bracket for actuation cable support and a fire rated (UL94-V0) nylon cap to seal a ceiling access hole. The mounting bracket shall be made from galvannealed steel and fasten to a structural member at the ceiling line. It shall secure and position a 1/4 dia" brass plated steel rotary actuation cable into a ceiling opening. The cable shall be operated with a standard 1/4" hex nut driver (by others) or the MAT square nut driver. The Ceiling Cap shall have a diameter of not larger then 1", require a 9/16" ceiling penetration (ensuring compliance with national regulations for penetration of a fire rated ceiling), and mount flush with the ceiling, providing an unobtrusive access point. The ceiling cap shall fit over the actuation cable end and accommodate ceiling panel thicknesses of .500" to 1.250".

Ceiling Cap shall be Metropolitan Air Technology LLC. Model #RT-CCM or equivalent.

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RT-CCM Mini Ceiling Cup

 Represented by:  
 6235 South Oak Park Avenue Chicago, IL 60638  USA
  Toll free: 800.585.7686  +1.708.552.4040  
  Fax: +1.708.594.0396  www.metairtech.com
Model RT-CCM Mini Ceiling Cup
Roto-Twist® cable actuated damper drive system.

A Ceiling Cup with a cap diameter no larger than a quarter rendering it virtually invisible.

**Design & Materials**
- Galvannealed steel mounting bracket (can be used on wood or metal studs)
- One inch diameter UL94-VO fire rated nylon ceiling cap
- 1/4” diameter brass plated steel rotary cable secured in the mounting bracket with an aluminum ferrule

**Features & Options**
- Bracket mounts flush to the ceiling line
- Low profile paintable ceiling cap for aesthetic finish
- Two ceiling cap sizes allow application with ceiling panel thickness from 1/2” to 1 1/4”
- Simple installation
- Accessible with standard hex nut drivers or MAT square nut driver

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Mounting Bracket

Ceiling Cap

1” (25.4mm)

Ceiling Access

Patent Pending
Model RT-CCR Round Ceiling Cup

Roto-Twist® cable actuated damper drive system. Used for cable termination in a wall or ceiling.

**Specification**
Furnish a self-supporting UL94-V0 fire rated polystyrene molded Ceiling Cup with a diameter of not more than 2” and a paintable 2 3/4” self threading ceiling cap. The Ceiling Cup shall require less than 1 square inch penetration to ensure compliance with national regulations for penetration of a fire rated ceiling. The Ceiling Cup will mount flush with the ceiling and the ceiling cap shall provide an unobtrusive finish flush with the ceiling surface. The Ceiling Cup will also provide an alternative mounting bracket made of galvanized steel, which will allow positioning of the device prior to ceiling installation. Ceiling Cup should provide access for a 1/4” brass plated rotary cable that can be operated with a standard hex nut driver or MAT square nut driver. Ceiling Cup will accept cable from the top and be supported by a rubber grommet and aluminum ferrule.

Ceiling Cup shall be Metropolitan Air Technology LLC. Model # RT-CCR or approved equal.
Model RT-CCR Round Ceiling Cup
Roto-Twist® cable actuated damper drive system.

Polystyrene molded Ceiling Cup with self-threading face plate that mounts flush to the ceiling.

**Design & Materials**
- UL94-VO fire rated 2” diameter polystyrene cup with 2.79” diameter ceiling cap
- Galvanized steel mounting bracket (can be used on wood or metal studs). Cup can also be mounted freestanding
- Zinc plated retaining bar to secure the cup behind the ceiling
- 1/4” diameter brass plated steel rotary cable secured in the Ceiling Cup with a rubber grommet and aluminum ferrule

**Features & Options**
- Paintable self-threading face plate mounts flush to the ceiling, providing an unobtrusive finish
- Requires less than 1 square inch of ceiling penetration, ensuring compliance with national fire rated ceiling regulations
- No linkage or cable adjustment required during installation
- Rotary control cable adjustment with standard hex nut drivers or MAT square nut driver
Model RT-CCS Square Ceiling Cup Roto-Twist® cable actuated damper drive system. Used for cable termination in a wall or ceiling.

Specification
Furnish a 16 gauge galvanized steel Ceiling Cup 2 3/4" deep, 3" high, 1 7/8" wide and blank cover plate with flat mounted bracket for attachment to wood or metal studs. The cover plate will mount flush with the ceiling or wall and provide an unobtrusive finish with the surface. Ceiling Cup should provide access and support for a 1/4" brass plated rotary cable (from either the top or side location) that can be operated with a standard hex nut driver (by others) or MAT square nut driver. The cable shall be supported by a rubber grommet and aluminum ferrule and stabilized by a 7/8” guide and bushing.

Ceiling Cup shall be Metropolitan Air Technology LLC. Model #RT-CCS or approved equal.
Model RT-CCS Square Ceiling Cup
Roto-Twist® cable actuated damper drive system.

Original Ceiling Cup design that can be used in ceiling or wall applications.

**Design & Materials**
- Galvanized steel Ceiling Cup, 2 3/4” deep with flat mounting bracket (can be used on wood or metal studs)
- 1/4” diameter brass plated steel rotary cable supported with screw-type connector and isolating rubber grommet
- Powder coated steel cover plate with standard countersunk screw mount

**Features & Options**
- One piece assembly with no linkage or cable adjustment required during installation
- Can be used for wall or ceiling mount applications
- Cable entry point from either a top or side location
- Rotary cable adjustment with standard hex nut drivers or MAT square nut driver
- Security screws available
- Water tight surface mount box with stainless steel cover plate & gasket available for laboratory
**Model RT-MB Mounting Bracket** Roto-Twist® cable actuated damper drive system. Used for cable termination in a wall or ceiling.

**Specification**

Furnish a metal cable support bracket that is secured inside a metal mounting bracket. Both brackets shall be made from galvannealed steel. The mounting bracket shall provide bottom side fastening to a diffuser housing, plenum, or grille. The cable support bracket shall fasten inside the mounting bracket and secure and position a 1/4” brass plated steel rotary actuation cable above an access hole. The cable shall be operated with a standard hex driver or the MAT square nut driver. A 1” diameter UL 94 V-0 rated nylon cap shall be furnished for optional use as a cover for the access hole. Cable bracket assembly shall be Metropolitan Air Technology model RT-MB or equivalent.

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**RT-MB Mounting Bracket**

Represented by: 6235 South Oak Park Avenue Chicago, IL 60638 USA
Toll free: 800.585.7686  +1.708.552.4040
Fax: +1.708.594.0396  www.metairtech.com
Rotary Cable Specification Sheet
Roto-Twist® cable actuated damper drive system.

Construction
Six-layer rotary cable comprised of 55 brass-plated carbon steel wires.

Characteristics
1. Torsional Strength (in-lbs)\(^1\): Wind - 190 / Unwind- 150
2. Torsional Deflection (degrees)\(^2,3\): Wind – 10 / Unwind – 13
3. Torque to Rotate (in-lbs.)\(^4\): Wind/Unwind – 1.2
4. Bend Radius: 2-5/8”
5. Operating Radius: 3.5”
6. Weight: Approx 12 lbs/100ft

\(^1\)As performed under a 10 lb. axial load
\(^2\) As tested on a 1 foot long cable shaft with an applied torque of 1 in-lb.
\(^3\) As tested on a 2 foot long cable
Battery Powered Dampers
**Specification**

Furnish UL Classified battery powered remotely controlled volume dampers in inaccessible branch ducts feeding continuous linear diffuser plenums and where otherwise indicated. Reference architectural drawings for location of gypsum board ceilings. Plenum rated wiring and connector shall be routed through the ductwork and plenum and terminated at the diffuser or grille face. Dampers shall be adjustable through the diffuser face using the MAT EB-RC hand held remote control unit. The control unit shall indicate the position of the damper blade in 10% increments between full open and full closed through a series of LEDs on the face of the unit. The control module features shall include an LED open circuit indicator for field verification of proper installation, a 2-color LED array damper position indicator, and an automatic motor shut-off feature at full open and full closed positions. Galvanized steel radial damper shall be actuated by a 9V DC motor mounted to the damper support bracket. Entire assembly shall be furnished as one piece for installation with no linkage adjustment required or miscellaneous small parts. Each unit shall be factory tested as a complete assembly prior to shipment. Damper assembly shall include a nylon barrel clamp for securing the connector to the plenum. Direct damper control shall be provided without sleeves, springs, or screw adjustments (that may loosen after ceiling closure). Dampers shall be Metropolitan Air Technology LLC Model #EB-150.

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**Model EB-150 Radial Damper**

Electro-Balance® Battery Powered Damper. Damper drive and wiring are located inside the air stream. Damper is actuated through the diffuser or grille face.
Model EB-150 Radial Damper

Electro-Balance® Battery Powered Damper. Damper drive and wiring are located inside the air stream. Damper is actuated through the diffuser or grille face.
Model EB-150 Radial Damper System

Electro-Balance® Battery Powered Damper. Damper drive and wiring are located inside the air stream. Damper is actuated through the diffuser or grille face.

Design & Materials
A. Galvannealed steel radial damper spring loaded to hold position. Also available in aluminum and stainless steel (300 series).
B. Damper pivot pin accepts motor shaft.
C. Galvannealed damper support bracket.
D. 9V DC motor.
E. Plenum rated wiring.
F. Over molded DC power connector.

Features
- Furnished as one piece for easy installation.
- Various wire lengths available
- No linkages or cables to adjust.
- No small loose parts to get lost.
- Max. recommended air velocity = 8.13 m/s. (1600 ft/min).

Available Sizes
- 6” (150mm) Ø
- 8” (200mm) Ø
- 10” (250mm) Ø
- 12” (300mm) Ø

Custom sizes available upon request
Model EB-RC Hand Held Remote Control

Electro-Balance® Battery Powered Damper.

Design & Materials
A. 10 position LED array for indicating damper blade position.
B. Rocker switch to open and close damper.
C. On / off slide switch with power LED.
D. Connector port for remote control wire tether.
E. Tab for removing battery cover.
F. Battery cover
G. Belt clip
Please read completely before installing this equipment.

Receipt Inspection
Check material received against packing list. Claims resulting from factory errors must be made within 2 weeks after receipt of goods.

Installation
1. EB-150 radial dampers are furnished as one piece and undersized ¼” from nominal dimensions. Prior to installation check to make sure that wiring and connector have not been damaged in shipment.
2. Secure damper in position in the duct by using screws or rivets in the openings in the bearing bracket sides—minimum 1 screw per side. Preferred installation method is via #10 speed screws. Do not rack or distort damper.
3. Prior to closing the ceiling, TEST the unit to verify smooth damper operation and system connectivity:
   a. Connect the EB-150 damper connector to the hand held remote control using the grey male-to-male connector cable supplied with the remote.
   b. Turn on the remote using the slide switch on the side of the housing (see reverse side of this page for illustrations of the EB-RC Remote Control features). The green on/off LED will illuminate.
   c. Operate the rocker switch on the remote control to ensure smooth damper operation through the open/close cycle. Right toggle opens the damper, left toggle closes the damper.
      i. If the LED array on the remote control flashes red then green, connectivity has been broken. Check for sliced wiring or a loose connection at the motor. NOTE: If wiring or connectors are damaged in the field, they can be replaced quickly. Contact your sales rep for replacement components.
      ii. If the remote control turns the EB-150 damper off prior to the damper reaching a full open or full closed position, check to make sure that the damper is mounted properly and that there is no interference in the radial blade path.
4. When ready, route the wiring down the duct work and through the diffuser or grille. Excess wiring can be bundled using the wire tie provided. Locate and install the connector clip if you will be using it.

Operation
Dampers are adjusted by connecting the grey male-to-male wire tether (supplied with the remote) to the hand held remote control and the damper motor connector. Turn on the remote using the slide switch on the side of the housing. The green on/off LED will illuminate. Press the rocker switch on the remote control to operate the damper. Right toggle opens the damper, left toggle closes the damper. The LED array will indicate approximate blade position. To use this feature, the damper must first be set to a full open or closed position. Then as you operate the remote, the LEDs will light up in sequence. There are 10 LEDs. If five are lit, the damper is 50% open. The on/off LED will flash to indicate low battery condition. The remote will continue to operate the damper but battery replacement will be needed soon. The Duracell 9V battery can be replaced by removing the battery cover on the back of the remote housing. It is not necessary to remove the belt clip to replace the battery. After balancing is complete, snap the connector into the cable clip or push the connector up behind the diffuser/grille face.
Model EB-250 Round Damper & EB-UDD Universal Damper Drive

Electro-Balance® Battery Powered Damper. Damper drive and wiring are located outside the air stream with connector termination in a wall or ceiling.

Specification

Furnish damper and UL Classified battery powered damper drive system to manually control dampers from a remote location. Reference architectural drawings for locations of gypsum board ceilings. The damper and damper drive shall be furnished as a complete assembly. Damper shall have a 20 gage (.91mm) roll formed galvanized steel frame (sleeve) with beads at each end. Blades shall be 20 gage (.91mm) round single piece design, mechanically attached to the axle with support brackets. Axes shall be 3/8" (9.52mm) square plated steel with molded synthetic bearings housed in the damper frame. Damper control shaft shall be 3/8" (9.52mm) square shaft, minimum of 3" (75mm) long. The damper drive system shall consist of a motorized worm gear drive pre-wired with plenum rated cable and female over-molded connector, a wall or ceiling connector termination fixture, and a hand held control module (only one required per jobsite). The drive unit construction shall consist of a 14 gage galvanized mounting bracket, anodized aluminum worm and worm gear set, and a black oxide coated steel drive shaft/cable coupling. A 9V DC motor shall be factory mounted to the damper drive and compliance tested prior to shipment. The over-molded connector shall fit into a surface termination plate, a surface mount wall bracket, or a recessed diffuser mount clip without requiring any tools. Plastic surface termination plates shall be UL94-V0 flammability rated. The damper drive shall be operated by a hand held remote control module powered by a 9V battery. Hand held remote control module features shall include an LED open circuit indicator for field verification of proper installation, a 2-color LED array damper position indicator, and an automatic motor shut-off feature at full open and full closed positions. Battery powered dampers shall be Metropolitan Air Technology LLC Model #EB-250 with EB-UDD universal damper drive. Connector terminations shall be either MAT Model #EB-SP1 single connector surface termination plate, Model #EB-SP8 eight connector surface termination plate, Model #EB-AB8 eight connector wall mount bracket, or Model #EB-DF diffuser mount clip.
Model EB-250 Round Damper  Electro-Balance® Battery Powered Damper. Damper drive and wiring are located outside the air stream with connector termination in a wall or ceiling.

During Balancing

After Balancing
Model EB-250 Round Damper System

Electro-Balance® Battery Powered Damper.

Design & Materials
A. 20 gage galvanized steel damper frame with rolled bead stiffeners.
B. 20 gage reinforced blade, self lubricating bearings
C. UL Classified EB-UDD Universal Damper Drive with 9V motor and plenum rated cable with over-molded female connector.
D. EB-SP1 Single Connector Wall Plate.

Other Connector Termination Options
• EB-SP8 Eight Connector Wall Interface
• EB-AB8 Eight Connector Surface Mount Bracket

Available Sizes*
• 4" (100mm) Ø
• 5" (125mm) Ø
• 6" (150mm) Ø
• 7" (175mm) Ø
• 8" (200mm) Ø
• 10" (250mm) Ø
• 12" (300mm) Ø
• 14" (350mm) Ø
• 15" (375mm) Ø
• up to 20" (500mm) Ø

*Dampers are also available in aluminum and stainless steel in all sizes

EB-250 Radial Damper System

Represented by: 6235 South Oak Park Avenue Chicago, IL 60638 USA
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Fax: +1.708.594.0396 www.metairtech.com

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Model EB-UDD Universal Damper Drive

Electro-Balance® Battery Powered Damper.

Design & Materials
A. 14 gage galvanized steel mounting bracket.
B. 9V DC motor.
C. Machined aluminum worm gear.
D. Machined aluminum worm.
E. Black oxide coated steel shaft/coupling.
F. Set screws.
G. Pre-wired with plenum rated cable.
H. 5.5mm DC power connector.
Model EB-RC Hand Held Remote Control
Electro-Balance® Battery Powered Damper.

Design & Materials
A. 10 position LED array for indicating damper blade position.
B. Rocker switch to open and close damper.
C. On / off slide switch with power LED.
D. Connector port for remote control wire tether.
E. Tab for removing battery cover.
F. Battery cover
G. Belt clip
Model EB-UDD Battery Powered Damper Drive Installation & Operation

Electro-Balance® Battery Powered Damper.

Please read completely before installing this equipment.

Receipt Inspection
Check material received against packing list. Claims resulting from factory errors must be made within 2 weeks after receipt of goods.

Installation
1. Prior to installing damper in duct, check to make sure blades operate freely with no binding or restriction. Blade interference or damper shaft interference with blade stop hardware may falsely signal to the remote control that the damper blade is in a full open or full closed position (in contact with the blade stop). This will result in the motor being turned off by the remote.

2. Secure the damper to duct. Make sure that fasteners do not interfere with blade operation and that damper is not racked. **Proceed to step 5 if you have purchased the EB-UDD drive with MAT dampers**

3. Mount EB-UDD universal damper drive to damper stand-off bracket or damper side plate by securing the damper drive in two locations opposed about the damper shaft. **Note: Mounting holes must be located to ensure that the spur gear axis and the damper shaft axis are concentric to prevent eccentric loads on the damper shaft.**

4. Align square shafts so as to catch set screws directly on flats. Tighten all four (4) set screws with a 1/8” Allen key so they are snug on the damper shaft. **Do not over tighten.**

5. Route wiring to the connector termination point. Excess cable can be bundled using the wire tie provided

6. Before closing the ceiling, test the unit to verify smooth damper operation and system connectivity:
   a. Connect the EB-UDD universal damper drive connector to the hand held remote control using the grey male-to-male connector cable supplied with the remote. (See Figure 1)
   b. Turn on the remote using the slide switch on the side of the housing. The green on/off LED will illuminate. Press the rocker switch on the remote control to operate the damper. Right toggle opens the damper, left toggle closes the damper. If the LED array blinks alternating red and green, there is an open connection. Check to make sure the remote control male connectors are pushed all the way in.
   c. Operate the rocker switch on the remote control to ensure smooth damper operation through the open/close cycle. Right toggle opens the damper, left toggle closes the damper.

   i. **If the LED array on the remote control flashes red then green, connectivity has been broken.** Check for sliced wiring or a loose connection at the motor. Note: If wiring or connectors are damaged in the field, they can be replaced quickly. Contact your sales rep for replacement components.

   ii. If your damper has blade stops, the remote will turn off the motor when the damper blade contacts the stops. If the remote control turns the EB-UDD universal damper drive off prior to the damper reaching a full open or full closed position, check to make sure that there are no fasteners interfering with damper blade operation.

   iii. If using non MAT dampers, check to make sure that the EB-UDD universal damper drive is mounted concentric with the damper shaft.

7. The LED array will indicate approximate blade position for dampers with 90° open/close cycle. To use this feature, the damper must first be set to a full open or closed position. Then as you operate the remote, the LEDs will light up in sequence. There are 10 LEDs. If five are lit, the damper is 50% open.

8. The EB-UDD universal damper drive connectors can be terminated in a wall or ceiling using various MAT surface termination fixtures: See separate installation instructions for these items.

Operation Of EB-UDD Universal Damper Drive
Dampers are adjusted by connecting the grey male-to-male wire tether (supplied with the remote) to the hand held remote control and the damper motor connector. Turn on the remote using the slide switch on the side of the housing. The green on/off LED will illuminate. Press the rocker switch on the remote control to operate the damper. Right toggle opens the damper, left toggle closes the damper. If the LED array blinks alternating red and green, there is an open connection. Check to make sure the remote control male connectors are pushed all the way in.

The LED array will indicate approximate blade position for dampers with 90° open/close cycles. To use this feature, the damper must first be set to a full open or closed position. Then as you operate the remote, the LEDs will light up in sequence. There are 10 LEDs. If five are lit, the damper is 50% open.

The on/off LED will flash to indicate low battery condition. The remote will continue to operate the damper but battery replacement will be needed soon. The Duracell 9V battery can be replaced by removing the battery cover on the back of the remote housing. It is not necessary to remove the belt clip to replace the battery.
Model EB-UDD Battery Powered Damper Universal Damper Drive Installation & Operation

Electro-Balance® Battery Powered Damper.

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Figure 1 – Illustration for System Connectivity Test

EB-RC Remote control
Model Model EB-200 Rectangular Damper & EB-UDD Universal Damper Drive

Electro-Balance® Battery Powered Damper. Damper drive and wiring are located outside the air stream with connector termination in a wall or ceiling.

Specification
Furnish damper and UL Classified battery powered damper drive system to manually control dampers from a remote location. Reference architectural drawings for locations of gypsum board ceilings. Damper frame construction shall be 1.6mm thick galvanized steel hat shaped channel design with corner braces. Linkage shall be concealed in the frame. Damper blades (opposed or parallel action) shall be 1.6mm thick galvanized steel single skin, 150mm wide with 3 full-length longitudinal V grooves. Axles shall be 12.7mm Dia. plated steel hex that rotate inside molded synthetic bearings. Bearings shall be supported inside extruded holes in the damper frame. Damper control shaft shall be 3/8” (9.52mm) square shaft, minimum of 3” (75mm) long. The damper drive system shall consist of a motorized worm gear drive pre-wired with plenum rated cable and female over-molded connector, a wall or ceiling connector termination fixture, and a hand held control module (only one required per jobsite). The drive unit construction shall consist of a 14 gage galvanized mounting bracket, anodized aluminum worm and worm gear set, and a black oxide coated steel drive shaft/cable coupling. A 9V DC motor shall be factory mounted to the damper drive and compliance tested prior to shipment. The over-molded connector shall fit into a surface termination plate, a surface mount wall bracket, or a recessed diffuser mount clip without requiring any tools. Plastic surface termination plates shall be UL94-V0 flammability rated. The damper drive shall be operated by a hand held remote control module powered by a 9V battery. Hand held remote control module features shall include an LED open circuit indicator for field verification of proper installation, a 2-color LED array damper position indicator, and an automatic motor shut-off feature at full open and full closed positions. Battery powered dampers shall be Metropolitan Air Technology LLC Model #EB-250 with EB-UDD universal damper drive. Connector terminations shall be either MAT Model #EB-SP1 single connector surface termination plate, Model #EB-SP8 eight connector surface termination plate, Model #EB-AB8 eight connector wall mount bracket, or Model #EB-DF diffuser mount clip.
Model EB-200 Rectangular Damper & EB-UDD
Universal Damper Drive  Electro-Balance® Battery Powered Damper

During Balancing

After Balancing

EB-UDD Universal Damper Drive
Plenum by others
Plenum rated wire with female DC Power connector
1” Ø White Nylon Cap (UL 94-V0 Fire Rated)
Diffuser by others

Represented by:  
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Model EB-200 Rectangular Damper Drive System
Outside the air stream. Electro-Balance® Battery Powered Damper

Design & Materials
A. 1.6mm galvanized steel channel frame with braced corners.
B. 1.6mm gage galvanized steel blades – opposed blade design (parallel blades optional).
C. Self-lubricated synthetic bearings.
D. Damper side plate for mounting EB-UDD drive unit.
E. 3/8” (9.52mm) square (flat/flat) control shaft.
F. EB-UDD Universal Drive
G. 9V DC Motor.
H. Plenum rated cable.
I. EB-SP1 Single Port Wall Plate.

Other Connector Terminations
• EB-SP8 Eight Connector Wall Plate
• EB-AB8 Eight Connector Surface Mount Bracket

Available Sizes*
• 6” x 6” (150mm x150mm)
• 8” x 6” (200mm x150mm)
• 10” x 4” (250mm x100mm)
• 10” x 6” (250mm x150mm)
• 10” x 8” (250mm x200mm)
• 12” x 4” (300mm x100mm)
• 12” x 8” (300mm x200mm)
• 12” x 5” (300mm x125mm)
• 12” x 6” (300mm x150mm)
• 14” x 6” (350mm x150mm)
• 14” x 8” (350mm x200mm)
• 16” x 6” (400mm x150mm)
• 16” x 8” (400mm x200mm)
• 18” x 6” (450mm x150mm)
• 24” x 6” (600mm x150mm)

Max size – 48”x 48” (1219mm x1219mm). Larger sectional dampers available up to 96” x 96”

*Dampers 300mm high and less -20 gauge single blade design with 20 gauge straight frame

*Aluminum slim line style dampers available to 22”x18”
*Stainless steel dampers are available in all sizes
Model EB-UDD Universal Damper Drive
Outside the air stream. Electro-Balance® Battery Powered Damper Drive.

Design & Materials
A. 14 gage galvanized steel mounting bracket.
B. 9V DC motor.
C. Machined aluminum worm gear.
D. Machined aluminum worm.
E. Black oxide coated steel shaft/coupling.
F. Set screws.
G. Pre-wired with plenum rated cable.
H. 5.5mm DC power connector.
Model EB-RC Hand Held Remote Control
Electro-Balance® Battery Powered Damper Drive.

Design & Materials
A. 10 position LED array for indicating damper blade position.
B. Rocker switch to open and close damper.
C. On / off slide switch with power LED.
D. Connector port for remote control wire tether.
E. Tab for removing battery cover.
F. Battery cover
G. Belt clip
Model EB-UDD Battery Powered Damper Universal Damper Drive Installation & Operation

Electro-Balance® Battery Powered Damper Drive.

Please read completely before installing this equipment.

Receipt Inspection
Check material received against packing list. Claims resulting from factory errors must be made within 2 weeks after receipt of goods.

Installation
1. Prior to installing damper in duct, check to make sure blades operate freely with no binding or restriction. Blade interference or damper shaft interference with blade stop hardware may falsely signal to the remote control that the damper blade is in a full open or full closed position (in contact with the blade stop). This will result in the motor being turned off by the remote.
2. Secure the damper to duct. Make sure that fasteners do not interfere with blade operation and that damper is not racked.
3. Mount EB-UDD universal damper drive to damper stand-off bracket or damper side plate by securing the damper drive in two locations opposed about the damper shaft. Note: Mounting holes must be located to ensure that the spur gear axis and the damper shaft axis are concentric to prevent eccentric loads on the damper shaft.
4. Align square shafts so as to catch set screws directly on flats. Tighten all four (4) set screws with a 1/8” Allen key so they are snug on the damper shaft. Do not over tighten.
5. Route wiring to the connector termination point. Excess cable can be bundled using the wire tie provided.
6. Before closing the ceiling, test the unit to verify smooth damper operation and system connectivity:
   a. Connect the EB-UDD universal damper drive connector to the hand held remote control using the grey male-to-male connector cable supplied with the remote. (See Figure 1)
   b. Turn on the remote using the slide switch on the side of the housing. The green on/off LED will illuminate.
   c. Operate the rocker switch on the remote control to ensure smooth damper operation through the open/close cycle. Right toggle opens the damper, left toggle closes the damper.
      i. If the LED array on the remote control flashes red then green, connectivity has been broken. Check for sliced wiring or a loose connection at the motor. Note: If wiring or connectors are damaged in the field, they can be replaced quickly. Contact your sales rep for replacement components.
      ii. If your damper has blade stops, the remote will turn off the motor when the damper blade contacts the stops. If the remote control turns the EB-UDD universal damper drive off prior to the damper reaching a full open or full closed position, check to make sure that there are no fasteners interfering with damper blade operation.
      iii. If using non MAT dampers, check to make sure that the EB-UDD universal damper drive is mounted concentric with the damper shaft.
7. The LED array will indicate approximate blade position for dampers with 90° open/close cycle. To use this feature, the damper must first be set to a full open or closed position. Then as you operate the remote, the LEDs will light up in sequence. There are 10 LEDs. If five are lit, the damper is 50% open.
8. The EB-UDD universal damper drive connectors can be terminated in a wall or ceiling using various MAT surface termination fixtures: See separate installation instructions for these items.

Operation Of EB-UDD Universal Damper Drive
Dampers are adjusted by connecting the grey male-to-male wire tether (supplied with the remote) to the hand held remote control and the damper motor connector. Turn on the remote using the slide switch on the side of the housing. The green on/off LED will illuminate. Press the rocker switch on the remote control to operate the damper. Right toggle opens the damper, left toggle closes the damper. If the LED array blinks alternating red and green, there is an open connection. Check to make sure the remote control male connectors are pushed all the way in.

The LED array will indicate approximate blade position for dampers with 90° open/close cycles. To use this feature, the damper must first be set to a full open or closed position. Then as you operate the remote, the LEDs will light up in sequence. There are 10 LEDs. If five are lit, the damper is 50% open.

The on/off LED will flash to indicate low battery condition. The remote will continue to operate the damper but battery replacement will be needed soon. The Duracell 9V battery can be replaced by removing the battery cover on the back of the remote housing. It is not necessary to remove the belt clip to replace the battery.
Model EB-UDD Battery Powered Damper Universal Damper Drive Installation & Operation

Outside the air stream. Electro-Balance® Battery Powered Damper Drive.

Figure 1 – Illustration for System Connectivity Test

EB-RC Remote control
Model EB-200 Rectangular Damper Drive Pressure Drop Chart  Electro-Balance® Battery Powered Damper
Model EB-SP1 Single Connector Finished Surface Interface
(for connector termination in a wall or ceiling). Electro-Balance® Battery Powered Damper

Specifications
Furnish a single port white plastic surface termination plate to capture and position Metropolitan Air Technology’s Electro-Balance® over-molded cable connector in a wall or ceiling opening. The surface termination plate shall be made from a UL94-V0 flammability rated paintable nylon material, have a diameter not larger than 1 3/8”, and mount flush to the ceiling or wall. The connector shall manually load into the surface termination plate and the assembly shall be inserted into the wall or ceiling opening without the need for any tools. An integral cap on the surface termination plate shall open to allow cable connector access. In the closed position, the cap shall rest flush with the surrounding plate surface, providing a smooth aesthetic appearance. The surface termination plate shall accommodate ceiling/wall thicknesses from 5/8” - 1”.

The surface interface plate shall be Metropolitan Air Technology LLC. (MAT) Model EB-SP1 and shall be used with MAT’s Electro-Balance® battery powered damper systems.
Model EB-SP8 Multiple Connector Finished Surface Interface (for connector termination in a wall or ceiling). Electro-Balance® Battery Powered Damper

Specifications
Furnish an 8 port white plastic surface termination plate and steel retaining bracket to capture and position Metropolitan Air Technology's Electro-Balance® over-molded cable connectors in a wall or ceiling opening. The surface termination plate shall be made from a UL94-V0 flammability rated paintable nylon material and mount flush to the wall (or ceiling) using a low-voltage (galvanized) steel retaining bracket or standard electrical box. Port locations shall be numbered and the inside surface of the removable cover shall provide space for port description information. The removable cover will install flush with the surrounding plate profile providing a smooth aesthetic appearance. Cable connectors shall snap manually into place from the rear without the need for any tools.

The 8 port surface interface plate shall be Metropolitan Air Technology LLC. (MAT) Model EB-SP8 and shall be used with MAT's Electro-Balance® battery powered damper systems.
Control Dampers

See General Information for Control Dampers

METROPOILTAN AIR TECHNOLOGY
6235 S OAK PARK AVE
CHICAGO, IL 60638 USA

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<th>Model</th>
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<th>Maximum Round Damper Diameter, In.</th>
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Last Updated on 2011-06-22
Attestation of Compliance

No. E8N 10 03 72372 002

Holder of Certificate: Metropolitan Air Technology Corp.
6235 S Oak Park Ave
Chicago IL 60638
USA

Name of Object: Controllers
(Low-voltage Motorized HVAC Damper & Controller)

Model(s): Air Balancing

Description of Object:
- Rated voltage: 9 V
- Protection class: III

Tested according to:
- EN 61000-6-1:2007
- EN 61000-6-3:2007

This Attestation of Compliance is issued according to the Directive 2004/108/EC relating to electromagnetic compatibility on a voluntary basis. It confirms that the listed apparatus complies with all essential requirements of the EMC directive and applies only to the sample and its technical documentation submitted to TUV SUD Product Service GmbH for testing and certification. See also notes overleaf.

Test report no.: 647100947001

Date: 2010-03-12
(Kitty Xu)

After preparation of the necessary technical documentation as well as the EC conformity declaration the required CE marking can be affixed on the product. Other relevant directives have to be observed.

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