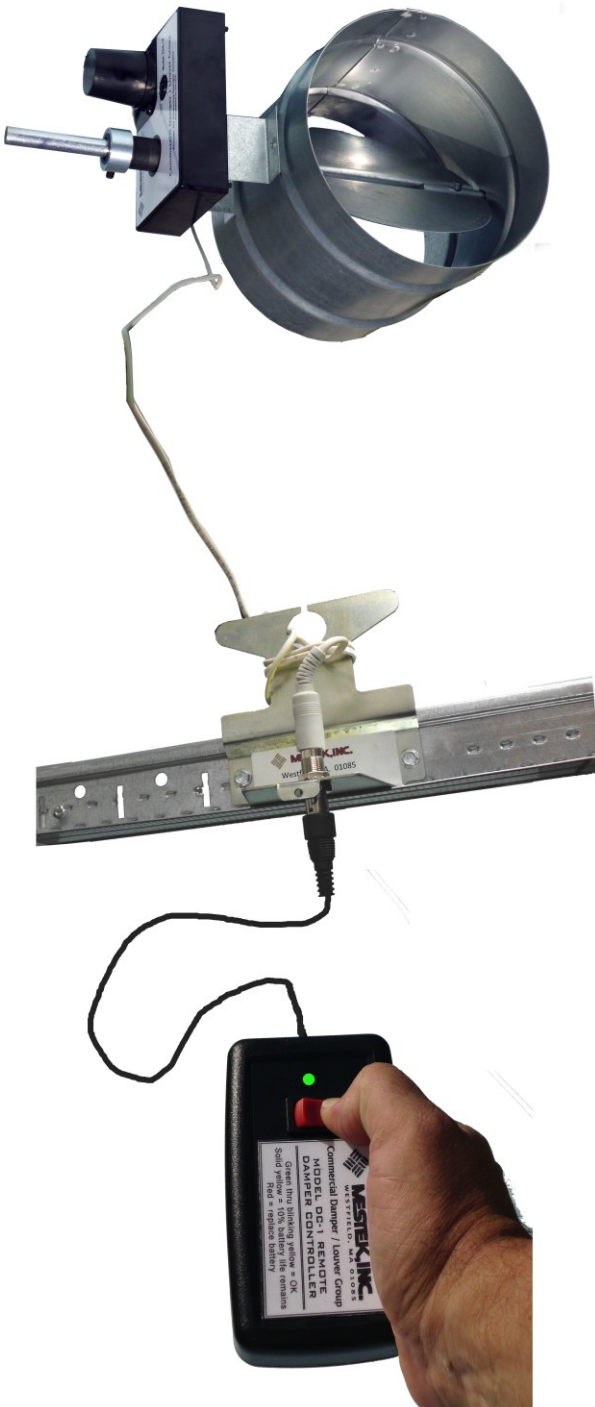


# ARROW UNITED INDUSTRIES



## REMOTE ACCESS BALANCING DAMPER SYSTEM



Arrow's new remote access ZSA-1 balancing system is offered on three different model balancing dampers. The following is a list of benefits when using the Arrow ZSA-1 system:

- Eliminates the need for unsightly access doors
- No custom assembled worm gears, push/pull or twist cable gadgets to install.
- The new actuator mounts on the side of the signal blade or small multi-blade dampers (see page 2)
- Power and Signal cable is plenum rated
- Installing contractor can route the power /signal cable to a ceiling receptacle bracket as shown here, or put a small slice in supply air duct just above the diffuser and allow the cable connector to attach at the air discharge in the occupied space seen on the next page.
- With the addition of additional power/signal cable, the damper and actuator can be mounted well upstream of the plenum discharge, greatly reducing or eliminating any noise from the damper.
- The ceiling receptacle bracket attaches to the standard industrial T-grid with two (2) sheet metal screws which are supplied by others and not Arrow.
- The DC-1 hand held control module provides the brains and power for the ZSA-1F Actuator. Every project will require only one (1) DC-1 controller.



# **ARROW UNITED INDUSTRIES**



**MESTEK, INC.**

## **REMOTE ACCESS BALANCING DAMPER SYSTEM**

Just about every new construction or renovation project, inevitably requires a few balancing dampers that are totally inaccessible after the ceiling has been installed. This instance produces a true Test and Balance Technician's nightmare. Arrow is now offering a solution for those inaccessible balancing dampers by adding three (3) new model balancing dampers (150-BCD, 200-BCD and 1770-BCD) to our standard product offering. Each of the new Arrow models comes complete with the new Mestek ZSA-1F Remote Control Actuator. The new Mestek ZSA-1F actuator is an electro-mechanical actuator that provides a quick and economical way to precisely adjust that inaccessible damper. The ZSA-1F actuator is driven by a 12 VDC motor that is powered by a Remote Control Module battery pack and requires no building power, so a quick and economical installation is assured. Because this damper assembly does not require a continuous power source it qualifies as a "Green Friendly" product. The housing of the ZSA-1F actuator is manufactured using materials that meet the UL Flammability Standard UL 94-5VA and comes complete with 8 feet of plenum rated cable. Each actuator has an operating range of +30° to +125° with a rated torque of 35 inch pounds. One of the many advantages to the new remote control and extended plenum rated cable is it eliminates the need for unsightly access doors in the finish ceiling. It also eliminates the need for worm gears, push/pull or twist cable gadgets to operate the damper during the balancing phase of the installation. As part of the complete remote control package, at least one hand held DC-1 or RCM-3 Remote Control Module (both sold separately) is required for each project. The DC-1 and the DCM-3 module contains the brains and power to operate the Mestek ZSA-1F Actuator. With the addition of the DC-1 or DCM-3 module plus additional plenum rated cable, the control damper assembly can be installed up to 150 feet upstream of the plenum discharge. This greatly reduces or eliminates any noise from the damper. Every DC-1 Remote Control Module comes complete with controller, 9 volt battery, and 54 inches of cable.



# **ARROW UNITED INDUSTRIES**

## **REMOTE ACCESS BALANCING DAMPER SYSTEM**



### **Model 150-BCD**

Signal Blade Rectangular Control Damper

**Frame:** 18 ga. Galvanized hat shape frame

**Blade:** 20 ga. Galvanized steel w/ forms edges and center bend

**Shaft:** ½" dia. Plated steel stub, Mono-Bolted to blade

**Actuator:** Gear driven, fail in place.

Requires 9 volt DC power that is supplied thru the DC-1 hand held controller.

**Damper Size:** 6" x 4" Minimum

36" x 12" Maximum



Shown w/ DC-1 controller  
(sold separate)

### **Model 200-BRD**

Signal Blade Round Control Damper

**Frame:** 22 ga. Galvanized steel sleeve

7 ½" long w/ reinforcing ribs

**Blade:** 20 ga. Galvanized steel

**Shaft:** ½" dia. Plated steel stub, Mono-Bolted to blade

**Actuator:** Gear driven, fail in place.

Requires 9 volt DC power that is supplied thru the DC-1 hand held controller.

**Damper Size:** 4" to 24"



Shown w/ DC-1 controller  
(sold separate)

### **Model 1770-BCD**

Small Rectangular Multi- Blade Control Damper

**Frame:** 16 ga. Galvanized hat shape frame

**Blade:** 16 ga. Galvanized steel w/ forms edges and center bend

**Seals:** Polyurethane Blade and Jamb

**Shaft:** ½" dia. Plated steel stub, Mono-Bolted to blade

**Actuator:** Gear driven, fail in place.

Requires 9 volt DC power that is supplied thru the DC-1 hand held controller.

**Damper Size:** 6" x 8 ¾" Minimum

20" x 36" Maximum



# **ARROW UNITED INDUSTRIES**

## **REMOTE ACCESS BALANCING DAMPER SYSTEM**

### **ZSA-1F Actuator**

The output shaft accepts 1/2" round profile damper shafts

12 VDC drive motor is powered the remote control module battery pack.



Standard 8 feet factory wired plenum rated power signal cable

Manual adjustment feature allows adjustment during installation if necessary.

Enclosure meets UL 940-5VA flammability rating for plenum rated use.



# **ARROW UNITED INDUSTRIES**

## **REMOTE ACCESS BALANCING DAMPER SYSTEM**

### **DC-1 Remote Control Module**

System function and  
battery indicator light

RCA-Type F-F  
coupler shipped with  
every controller



Single rocker switch to operate the  
damper blade clockwise or  
counterclockwise rotation.





# **ARROW UNITED INDUSTRIES**

## **REMOTE ACCESS BALANCING DAMPER SYSTEM**

### **Remote Control Module** **(RCM-3)**

The green LED blinks indicating that the actuator is energized and that the damper blade is rotating.

The “**Error**” LED will light instantly anytime an open or short circuit is detected at the power/signal cable after a run command is given from the arrow buttons or the Key Fob. This feature is very useful because it answers the question: “is the actuator working” before the ceiling is installed.

The CW and CCW arrows are used to operate the damper before making downstream air flow measurements using the Key Fob.

The “Set M/P” (mid-point) mode is used to set multi-blade balancing dampers such as those in primary or secondary zone ducts. When activated, the RCM-3 will set the damper blades to the approximate rotational mid-point between the physical end stops. Depending on the blade position at the start, this could take 20 – 25 seconds.

The feature would be useful to insure damper blades are at some known open position prior to starting up the primary supply fan for the first time. The “M/P” LED will on and the “Move” light will blink when this mode is operating.

The PWR button energizes the RCM-3 to operate the PCB's, the software and powers the ZSA-1 actuator.





# **ARROW UNITED INDUSTRIES**

## **REMOTE ACCESS BALANCING DAMPER SYSTEM**

### **Remote Control Module** **(RCM-3)**

Standard “out of the box”  
Receptacle Bracket  
mounted on Industrial T-  
grid  
View is also showing how  
the remote controller  
Module (RCM-3) is  
supported by the “finger” of  
the ceiling bracket during the  
test and balance  
function. Bracket finger is  
removed after the  
completion of the T&B  
stage, by twisting the finger  
90 to 120° back and  
forth with a pair of pliers.



Simulated Ceiling

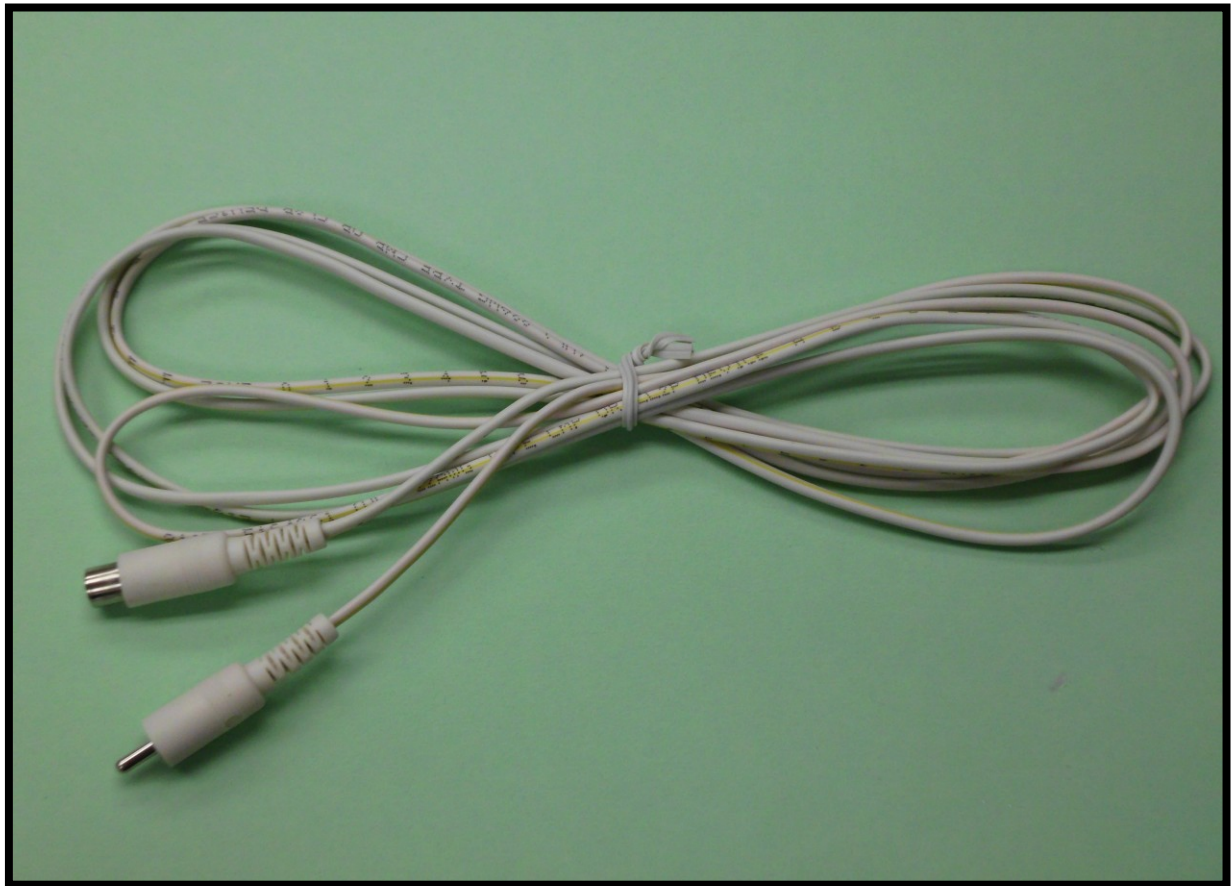




# **ARROW UNITED INDUSTRIES**

## **REMOTE ACCESS BALANCING DAMPER SYSTEM**

### **Plenum Rated Cable Extensions**



The ZSA-1F remote actuator is supplied with eight (8) foot of plenum rated cable, but in some cases the 8 ft. of cable may not be enough. Arrow makes additional lengths of the plenum rated cable are available with one male and one female connector on each end for hassle free connection. The additional cable extensions are available in 10, 20, 30 and 50 feet lengths





# **ARROW UNITED INDUSTRIES**

## **REMOTE ACCESS BALANCING DAMPER SYSTEM**

### **Ceiling Receptacle Bracket**

The standard CR bracket functions are:

1. Provides the take-up spool to prevent any excess power/signal cable from dropping below the plane of the ceiling grid.
2. Provides the electrical connection between the inaccessible actuator and the hand held control module.
3. Provides support for the ceiling cover plate after the balance task is completed
4. The receptacle bracket also has a “finger” that provides hanging support for the Remote Control Module (RCM-3). This finger needs to be twisted off after the completion of the Test and Balance Function. Once the “finger” has been removed, the Ceiling Cover Plate then can be installed covering the 1 1/4” diameter hole in the ceiling material.





# **ARROW UNITED INDUSTRIES**

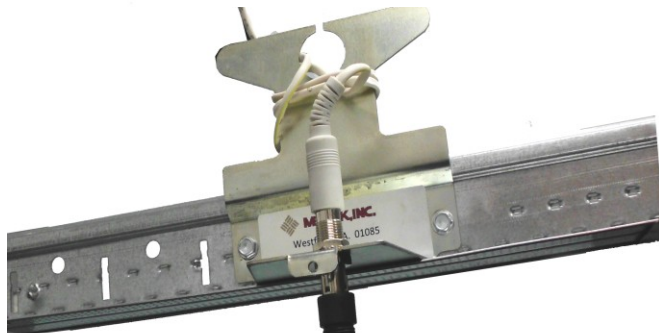
## **Ceiling Receptacle Bracket**

**Three different stages of the bracket during installation**

Standard “out of the box” Receptacle Bracket mounted on Industrial T-grid



Standard Receptacle Bracket mounted on Industrial T-grid with the “finger” removed after completing the balancing function. (Shown with hand held control DC-1 cable still attached (Black))



Standard Receptacle Bracket mounted on an industrial T-grid with the Ceiling Cover Plate in position to be snug into place, covering the 1 1/4" hole in the finished ceiling. The Cover Plate has a standard matte white finish that can be field painted to match the adjacent ceiling.



Cover Plate

Simulated Ceiling



# **ARROW UNITED INDUSTRIES**

## **REMOTE ACCESS BALANCING DAMPER SYSTEM**

### **Ceiling Receptacle Bracket**



At right is shown the optional **Ceiling Receptacle bracket finger** after the hard ceiling panels have been installed. This is what the balancing technician sees at each damper location.

The CR-T Receptacle Bracket mounted on Industrial T-grid for **“Lay-in”** T bar ceilings.  
Note; the power/signal cable connector is located on the wing of the bracket.





**ARROW UNITED INDUSTRIES**

**REMOTE ACCESS BALANCING DAMPER SYSTEM**

## **Routing of Plenum Rated Cable and Alternate Means of Connections**



Plenum rated cable can be routed along the outside of the flexible ductwork and then cut into ductwork just above the plenum discharge.



# **ARROW UNITED INDUSTRIES**

## **REMOTE ACCESS BALANCING DAMPER SYSTEM**

### **Plenum Rated Cable Connection at Diffuser**



Male cable connector can be located at the diffuser discharge eliminating the need for the Ceiling Receptacle. The male connector can be held securely in place and out of sight by a “peel-and-stick” plastic clip that is also available through Arrow United.



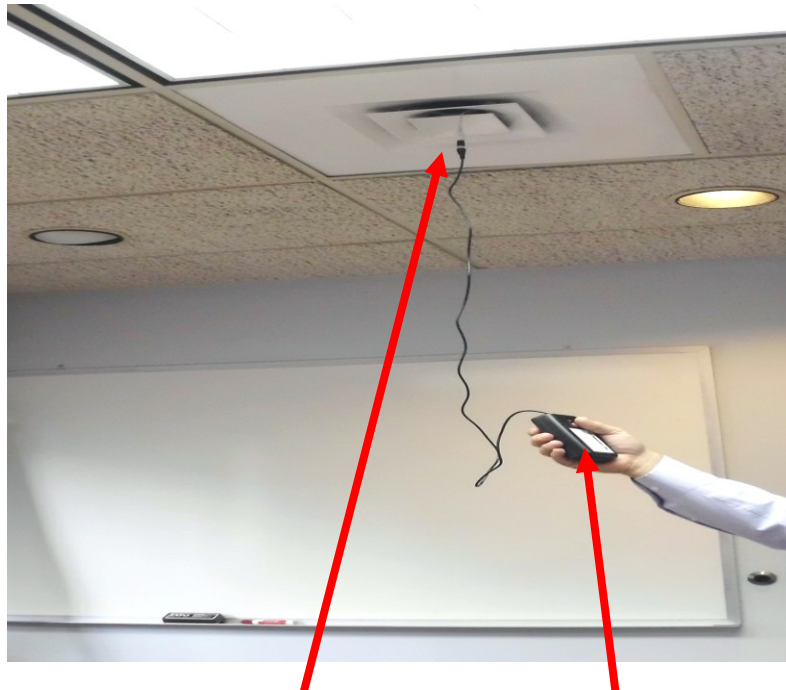
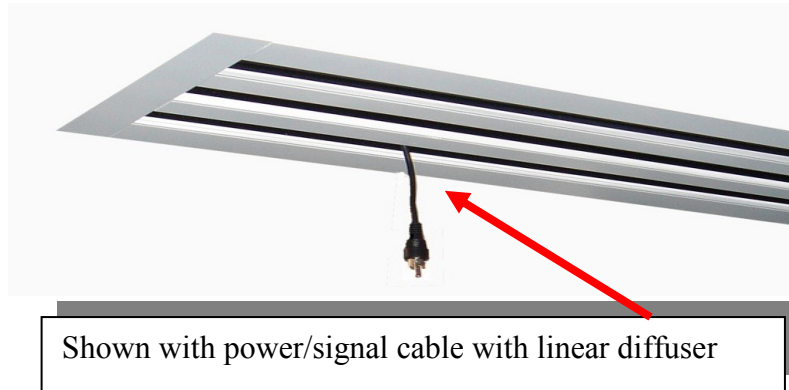




# **ARROW UNITED INDUSTRIES**

## **REMOTE ACCESS BALANCING DAMPER SYSTEM**

### **Adjusting Balancing Damper**



After the ceiling has been installed, the test and balance technician can attach the hand held remote controller and make adjustments to the inaccessible damper, controlling the air flow in the occupied space.

[illegible]



**ARROW UNITED INDUSTRIES**



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