



ST2 Ball Valve Actuators **Spring Return** **On/Off • Floating • Modulating**

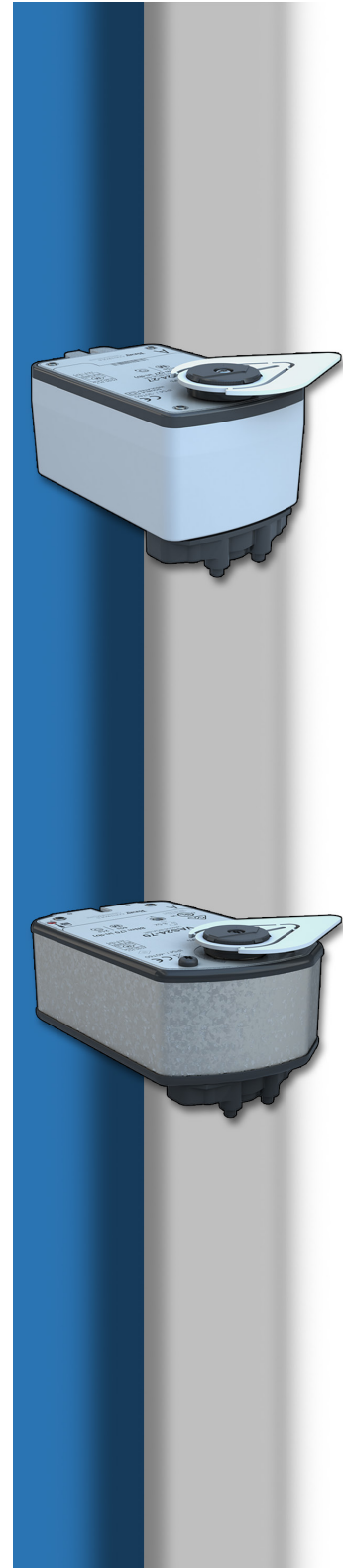
Application

Bray's wide variety of electric actuator choices increases flexibility when choosing peripheral products for Building Automation Systems.

We offer many different torque outputs and optional features to ensure you have the best actuator for the application. Jumper or DIP switch selectable features allow versatility in the field. The actuators are maintenance-free, which means fewer call backs after installation and start-up. In addition, our actuators are manufactured to ISO 9001 and Six Sigma Standards making them the highest quality on the market today.

Options include:

- Spring return operation
- Auxiliary switches (optional)
- Weather Shields for outdoor use
- 24V and line voltage models
- On/Off, Floating, or Modulating operation
- Analog feedback on all modulating models
- UL, CSA and CE listings
- 5-year warranty on selected models
- Flying lead or terminal strip electrical connections



Spring Return ST2 Ball Valve Actuators - VAS-27 Series



Technical Specifications - VAS-27 Series Actuator						
Type	Actuator Models	VAS24-27-(A)	VAS24-27-T-(A)	VAMS24-27-(A)	VASU20-27-(A)	
			Spring Return On/Off with optional Auxillary Switches (-A)	Spring Return On/Off & Floating with optional Auxillary Switches (-A)	Spring Return Modulating with optional Auxillary Switches (-A)	Spring Return On/Off with optional Auxillary Switches (-A)
	Torque	27 lb-in. (3 Nm)				
	Operating Voltage	24 VAC 19.2 to 28.8 V) at 50/60 Hz 24 VDC (21.6 to 28.8 V)			AC 100 to 240 V (85 to 264 V) at 50/60 Hz:	
	Power Consumption	VAC - 5 VA Running, 1.6 VA Holding	VAC - 4.7 VA Running, 2.7 VA Holding		0.06 A Running, 0.02 A Holding	
		VDC - 2.8 W Running, 0.8 W Holding	VDC - 1.8 W Running, 1 W Holding			
	Min. Transformer Size	6 VA per actuator			N/A	
Electrical	Input Signal Adjustments	N/A	AC 19.2 to 28.8 V at 50/60 Hz or DC 24 V +20%/-10% Class 2 or SELV. Minimum Pulse Width: 500 m sec.	Factory Setting - DC 0 to 10 V, CW Rotation with Signal Increase Selectable DC 0 (2) to 10 V or 0 (4) to 20 mA with Field-Furnished 500 ohm 0.25 W Min. Resistor Switch Selectable - Direct or Reverse Action with Signal Increase	N/A	
	Control Input Impedance	N/A	4,700 Ohms	100k Ohms, Current Input: 500 Ohms with Field Furnished 500 Ohm Resistor	N/A	
	Feedback Signal	N/A		DC 0 (2) to 10 V for Desired Rotation Range up to 95°. Corresponds to Rotation Limits, 0.5 mA at 10 V Maximum	N/A	
	Auxillary Switch Rating	(-A) Models) One Single-Pole, Double-Throw (SPDT), double-insulated switch with silver contacts: AC 24 V, 50 VA pilot duty AC 120 V, 5.8 A Resistive, 1/4 hp, 275 VA pilot duty AC 240 V, 5.0 A Resistive, 1/4 hp, 275 VA pilot duty			(-A) Models) One Single-Pole, Double-Throw (SPDT), Double-Insulated Switch with Silver Contacts: AC 24 V, 50 VA Pilot Duty AC 120 V, 5.8 A Resistive, 1/4 hp, 275 VA Pilot Duty AC 240 V, 5.0 A Resistive, 1/4 hp, 275 VA Pilot Duty	
	Equipment Rating	Class 2 or Safety Extra-Low Voltage (SELV)			N/A	
	Electrical Connection	48 in. UL 758 Type AWM Halogen-Free Cable with 18 AWG (0.85 mm ²) Conductors & 0.25 in. (6 mm) Ferrule Ends		Without Aux Switches		48 in. UL 758 Type AWM Halogen-Free Cable with 18 AWG (0.85 mm ²) Conductors & 0.25 in. (6 mm) Ferrule Ends
				120 in. UL 444 Type CMP Plenum Rated Cable w/ 19 AWG (0.75 mm ²) Conductors & 0.25 in. (6 mm) Ferrule Ends With Aux Switches		
Conduit Connections	Integral 1/2 in. (13 mm) Threaded Conduit Connector(s)					

Spring Return ST2 Ball Valve Actuators - VAS-27 Series Continued



Technical Specifications - VAS-27 Series Actuator - Continued					
Type	Actuator Models	VAS24-27-(A)	VAS24-27-T-(A)	VAMS24-27-(A)	VASU20-27-(A)
			Spring Return On/Off with optional Auxillary Switches (-A)	Spring Return On/Off & Floating with optional Auxillary Switches (-A)	Spring Return Modulating with optional Auxillary Switches (-A)
Operation	Spring Return	Direction is Selectable with Mounting Position of Actuator: Actuator Side A is away from damper or valve: CCW Spring Return Actuator Side B is away from damper or valve: CW Spring Return			
	Rotation Range	Maximum Full Stroke: 95° - (Adjustable Stop: 35 to 95° Maximum Position (Modulating Only))			
	Electric Stall Detection	Protects from overload at all angles of rotation			
	Runtime for 90° of Rotation	Power On (Running) 53 to 71 Seconds for 0 to 27 lb-in. (3 N-m) Load, at Room Temperature 60 Seconds Nominal at Full Rated Load (0.25 rpm) Power Off (Returning) 19 to 23 Seconds for 0 to 27 lb-in. (3 N-m) Load, at Room Temperature 22 Seconds Nominal at Full Rated Load 28 Seconds Maximum with 27 lb-in. (3 N-m) Load at -22°F (-30°C)	Power On (Running) 150 Seconds Constant for 0 to 27 lb-in. (3 N-m) Load, at All Operating Conditions Power Off (Returning) 12 to 17 Seconds for 0 to 27 lb-in. (3 N-m) Load, at Room Temperature 16 Seconds Nominal at Full Rated Load 22 Seconds Maximum with 27 lb-in. (3 N-m) Load at -22°F (-30°C)		Power On (Running) 24 to 28 Seconds for 0 to 27 lb-in. (3 N-m) Load, at Room Temperature 27 Seconds Nominal at Full Rated Load (0.5 rpm) Power Off (Returning) 19 to 23 Seconds for 0 to 27 lb-in. (3 N-m) Load, at Room Temperature 22 Seconds Nominal at Full Rated Load 28 Seconds Maximum with 27 lb-in. (3 N-m) Load at -22°F (-30°C)
	Cycle Life	60,000 Full Stroke Cycles with 27 lb-in. (3 N-m) Load, 1,500,000 Repositions with 27 lb-in. (3 N-m) Load			
	Mechanical Connections	Round Shafts - 1/4 in. to 1/2 in. (6 to 12 mm) Square Shafts - 1/4 in. to 5/16 in. (6 to 8 mm)			
	Enclosure	NEMA 2 (IP54) for all mounting orientations			
Environmental	Ambient Conditions (Non-Condensing)	Operating — -22 to 140°F (-30 to 60°C); 90% RH Maximum, Noncondensing Storage — -40 to 185°F (-40 to 85°C); 95% RH Maximum, Noncondensing			
	Audible Noise Rating	Running — <36 dBA at 27 lb-in. (3 N-m) Load, at a Distance of 39-13/32 in. (1 m) Holding — <20 dBA at a Distance of 39-13/32 in. (1 m) Returning — <51 dBA at 27 lb-in. (3 N-m) Load, at a Distance of 39-13/32 in. (1 m)	Running — <28 dBA at 27 lb-in. (3 N-m) Load, at a Distance of 39-13/32 in. (1 m) Holding — <20 dBA at a Distance of 39-13/32 in. (1 m) Returning — <56 dBA at 27 lb-in. (3 N-m) Load, at a Distance of 39-13/32 in. (1 m)		Running — <45 dBA at 27 lb-in. (3 N-m) Load, at a Distance of 39-13/32 in. (1 m) Holding — <20 dBA at a Distance of 39-13/32 in. (1 m) Returning — <51 dBA at 27 lb-in. (3 N-m) Load, at a Distance of 39-13/32 in. (1 m)
	Dimensions	6.38 in. x 3.23 in. x 2.26 in. (162 mm x 82 mm x 57.5 mm)			
	Weight	2.0 lb. (2.4 lb w/ Aux. Switches)			
Conditions	Agency Certifications	UL Listed, CCN XAPX, File E27734; to UL 60730-1A: 2003-08, Ed. 3.1, Automatic Electrical Controls for Household and Similar Use; and UL 60730-2-14: Ed. 1, Part 2, Particular Requirements for Electric Actuators. UL Listed, CCN XAPX7, File E27734; to UL 60730-1:02-CAN/CSA: July 2002, 3rd Ed., Automatic Electrical Controls for Household and Similar Use; and CSA C22.2 No. 24-93 Temperature Indicating and Regulating Equipment CE Mark - This product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC.			
	Warranty	C-Tick Mark, Australia/NZ Emissions Compliant 5 Years limited from time of shipment.			

Spring Return ST2 Ball Valve Actuators - VAS-27 Series Wiring



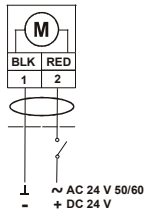
-(A) AUXILIARY SWITCH WIRING

(-A) Auxiliary Switches



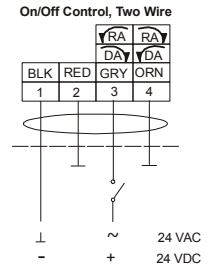
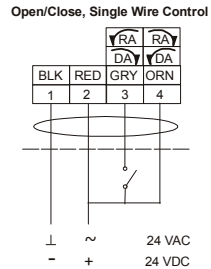
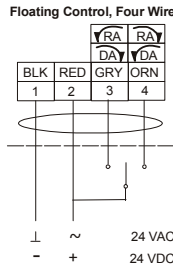
VAS24-27-(A) CABLE

On/Off



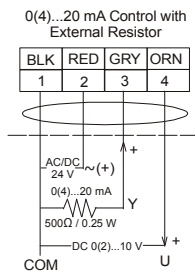
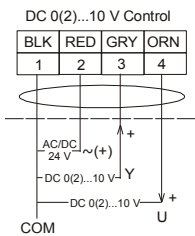
VAS24-27-T(A) CABLE

On/Off and Floating



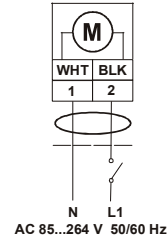
VAMS24-27-(A) CABLE

Modulating



VASU20-27-(A) CABLE

On/Off



Important - Do not install multiple VAS-27 Series actuators connected to the same mechanical load. Master-Slave application of DS-27 Series Actuators requires that each actuator be connected to independent loads.

Warning - These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

Spring Return ST2 Ball Valve Actuators - VAS-70 Series



Technical Specifications - VAS-70 Series Actuator					
Type	Actuator Models	VAS24-70-(A)	VAS24-70-T-(A)	VAMS24-70-(A)	VAS120-70-(A)
			Spring Return On/Off with optional Auxillary Switches (-A)	Spring Return On/Off & Floating with optional Auxillary Switches (-A)	Spring Return Modulating with optional Auxillary Switches (-A)
	Torque	70 lb-in. (8 Nm)			
	Operating Voltage	24 VAC (18 to 30 V) at 50/60 Hz 24 VDC (21.6 to 28.8 V)	24 VAC (19.2 to 28.8 V) at 50/60 Hz 24 VDC (21.6 to 28.8 V)		AC 120 V (102 to 132 V) at 60 Hz
	Power Consumption	VAC - 6.1 VA Running, 1.2 VA Holding VDC - 3.5 W Running, 0.5 W Holding	VAC - 7.9 VA Running, 5.5 VA Holding VDC - 3.5 W Running, 1.9 W Holding		0.05 A Running, 0.03 A Holding
	Min. Transformer Size	7 VA per Actuator	8 VA per Actuator		N/A
Electrical	Input Signal Adjustments	N/A	AC 19.2 to 28.8 V at 50/60 Hz or DC 24 V +20%/-10%, Class 2 or SELV, Minimum Pulse Width: 500 ms	Factory Setting - DC 0 to 10 V, CW Rotation with Signal Increase Selectable DC 0 (2) to 10 V or 0 (4) to 20 mA with Field-Furnished 500 ohm 0.25 W Min. Resistor Switch Selectable - Direct or Reverse Action with Signal Increase	N/A
	Control Input Impedance	N/A	3000 Ohms	100k Ohms, Current Input: 500 Ohms with Field Furnished 500 Ohm Resistor	N/A
	Feedback Signal	N/A		DC 0 (2) to 10 V for Desired Rotation Range up to 95°. Corresponds to Rotation Limits, 0.5 mA at 10 V Maximum	N/A
	Auxillary Switch Rating	(-A) Models) Two Single-Pole, Double-Throw (SPDT), Double-Insulated Switches with Gold over Silver Contacts: AC 24 V, 50 VA Pilot Duty			(-A) Models) Two Single-Pole, Double-Throw (SPDT), Double-Insulated Switches with Gold over Silver Contacts: AC 120 V, 5.8 A Resistive, 1/4 hp, 275 VA Pilot Duty
	Equipment Rating	Class 2 or Safety Extra-Low Voltage (SELV)			N/A
	Electrical Connection	48 in. UL 758 Type AWM Halogen-Free Cable w/ 18 AWG (0.85 mm ²) Conductors & 0.25 in. (6 mm) Ferrule Ends			
	Conduit Connections	Integral Connectors for 3/8 in. (10 mm) Flexible Metal Conduit			
	Manual Override	Manual Override Crank			
Operation	Spring Return	Direction is Selectable with Mounting Position of Actuator: Actuator Side A is away from damper or valve: CCW Spring Return Actuator Side B is away from damper or valve: CW Spring Return			
	Rotation Range	Maximum Full Stroke: 95° - (Adjustable Stop: 35 to 95° Maximum Position (Modulating Only))			
	Electric Stall Detection	Protects from overload at all angles of rotation			

Spring Return ST2 Ball Valve Actuators - VAS-70 Series Continued

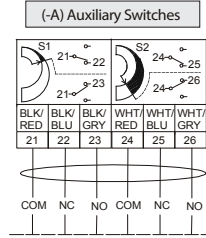


Technical Specifications - VAS-70 Series Actuator - Continued					
Type	Actuator Models	VAS24-70-(A)	VAS24-70-T-(A)	VAMS24-70-(A)	VAS120-70-(A)
			Spring Return On/Off with optional Auxillary Switches (-A)	Spring Return On/Off & Floating with optional Auxillary Switches (-A)	Spring Return Modulating with optional Auxillary Switches (-A)
Operation	Runtime for 90° of Rotation	Power On (Running) 55 to 71 Seconds for 0 to 70 lb-in (8 N-m) Load, at All Operating Conditions 60 Seconds Nominal at Full Rated Load (0.25 rpm) Power Off (Spring Returning) 13 to 26 Seconds for 0 to 70 lb-in (8 N-m) Load, at Room Temperature 21 Seconds Nominal at Full Rated Load, 39 Seconds Maximum with 70 lb-in (8 N-m) Load at -4°F (-20°C) 108 Seconds Maximum with 53 lb-in (6 N-m) Load at -40°F (-40°C)	Power On (Running) 150 Seconds Constant for 0 to 70 lb-in (8 N-m) Load, At All Operating Conditions Power Off (Spring Running) 17 to 25 Seconds for 0 to 70 lb-in (8 N-m) Load, at Room Temperature 22 Seconds Nominal at Full Rated Load, 94 Seconds Maximum with 70 lb-in (8 N-m) Load, at -40°F (-40°C)	Power On (Running) 55 to 71 Seconds for 0 to 70 lb-in (8 N-m) Load, at All Operating Conditions 60 Seconds Nominal at Full Rated Load (0.25 rpm) Power Off (Spring Returning) 13 to 26 Seconds for 0 to 70 lb-in (8 N-m) Load, at Room Temperature 21 Seconds Nominal at Full Rated Load, 39 Seconds Maximum with 70 lb-in (8 N-m) Load at -4°F (-20°C) 108 Seconds Maximum with 53 lb-in (6 N-m) Load at -40°F (-40°C)	
	Cycle Life	60,000 Full Stroke Cycles with 70 lb-in. (8 N-m) Load, 1,500,000 Repositions with 70 lb-in. (8 N-m) Load			
	Mechanical Connections	Round Shafts - 5/16 to 5/8 in. (8 to 16 mm) Square Shafts - 1/4 to 1/2 in. (6 to 12 mm)			
	Enclosure	NEMA 2 (IP54) for all mounting orientations			N/A
Environmental	Ambient Conditions (Non-Condensing)	Operating — -40° to 140°F (-40° to 60°C); 90% RH Maximum, Non-condensing Storage — -40° to 185°F (-40° to 85°C); 95% RH Maximum, Non-condensing			
	Audible Noise Rating	Running — < 47 dBA at 70 lb-in (8 N-m) Load, at a Distance of 39-13/32 in. (1 m) Holding — < 20 dBA at a Distance of 39-13/32 in. (1 m) Returning — <52 dBA at 70 lb-in. (8 N-m) Load - (All at a Distance of 39-13/32 in. (1 m))	Running — 35 dBA at 70 lb-in (8 N-m) Load, at a Distance of 39-13/32 in. (1 m) Holding — < 20 dBA at a Distance of 39-13/32 in. (1 m) Returning — <52 dBA at 70 lb-in. (8 N-m) Load - (All at a Distance of 39-13/32 in. (1 m))	Running — < 47 dBA at 70 lb-in (8 N-m) Load, at a Distance of 39-13/32 in. (1 m) Holding — < 20 dBA at a Distance of 39-13/32 in. (1 m) Returning — <52 dBA at 70 lb-in. (8 N-m) Load - (All at a Distance of 39-13/32 in. (1 m))	
	Dimensions	6.33" (L) x 3.90" (W) x 2.26" (H)			
	Weight	3.5 lb. (3.9 lb w/ Aux. Switches)			4.2 lb.
Conditions	Agency Certifications	UL Listed, CCN XAPX, File E27734; to UL 60730-1A: 2003-08, Ed. 3.1, Automatic Electrical Controls for Household and Similar Use; and UL 60730-2-14: Ed. 1, Part 2, Particular Requirements for Electric Actuators. UL Listed, CCN XAPX7, File E27734; to UL 60730-1:02-CAN/CSA: July 2002, 3rd Ed., Automatic Electrical Controls for Household and Similar Use; and CSA C22.2 No. 24-93 Temperature Indicating and Regulating Equipment CE Mark - This product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC. RCM Mark, Australia/NZ Emissions Compliant.			
	Warranty	5 Years limited from time of shipment.			

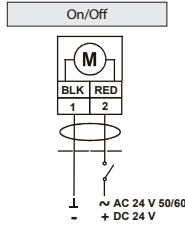
Spring Return ST2 Ball Valve Actuators - VAS-70 Series Wiring



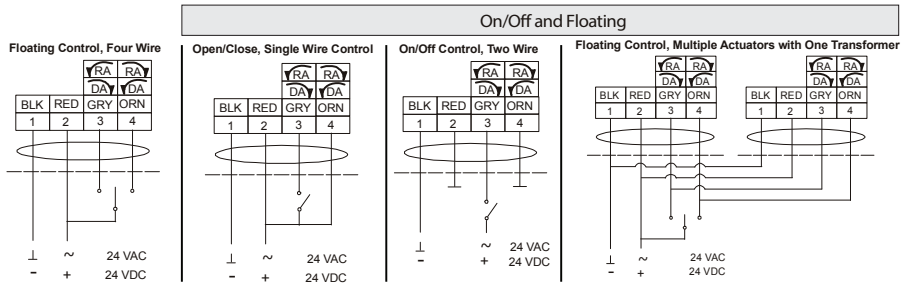
-(A) AUXILIARY SWITCH WIRING



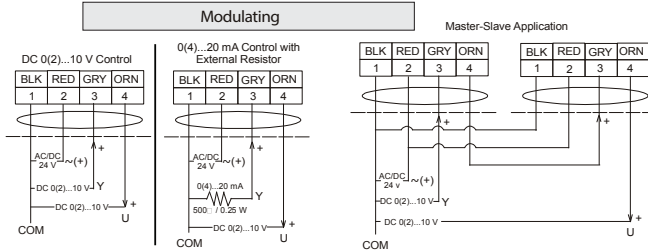
VAS24-70-(A) STANDARD CABLE



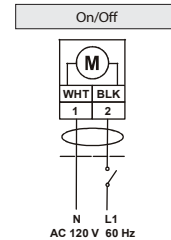
VAS24-70-T(A) STANDARD CABLE



VAMS24-70-(A) STANDARD CABLE



VAS120-70-(A) STANDARD CABLE



IMPORTANT: Do not install multiple VAMS series actuators connected to the same mechanical load. Master-slave application of DMS or VAMS series actuators requires that each actuator be connected to independent loads.

Warning - These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

Bray COMMERCIAL

Bray Commercial provides automated Butterfly, Ball, Globe and Pressure Independent Control Valves to the commercial building HVAC market throughout the world. Where ever valve performance is required to maintain climate controlled environments, Bray can provide the required automated valves to meet the demanding flow applications of chiller/boiler isolation, air handlers and terminal units for new construction, retrofit and/or LEED certification applications in buildings.

Building Types

- Healthcare
- Data Centers
- Government and Municipal
- Sports/Entertainment/Convention Centers
- K-12 and University Education
- Transportation
- Hotels
- Office Buildings
- Retail

SINCE 1986, BRAY HAS PROVIDED FLOW CONTROL SOLUTIONS FOR A VARIETY OF INDUSTRIES AROUND THE WORLD.

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Bray International, Inc.
13333 Westland East Blvd.
Houston, Texas 77041
1-281-894-5454



DIVISION HEADQUARTERS

Bray Commercial
13788 West Road, Suite 200A
Houston, Texas 77041
1-888-412-Bray (2729)



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