

- Non-Spring Return - Series 92
- Spring Return - Series 93

12/21/18

The Bray Series 92/93 high pressure pneumatic actuators are ideally suited to a wide range of quarter turn applications including butterfly valves, ball valves and dampers. These rack and pinion actuators are available in Series 92 double acting (air to open, air to close) and Series 93 single acting (spring return) models.

The compact and robust design of the Series 92/93 actuators feature an extruded aluminum housing, polyester-coated die cast aluminum end caps, die cast aluminum opposed pistons, and a carbon steel zinc plated output pinion. Conforming to the ISO 5211 top flange standard, all Series 92/93 actuators are directly mounted to the valve top plate or saddle without the need for adapters or brackets.

Series 92/93 actuators are available with a wide range of factory-mounted Brayline accessories including pneumatic positioners, electro pneumatic positioners, solenoid valves, position indicators and manual declutchable gear override assemblies.

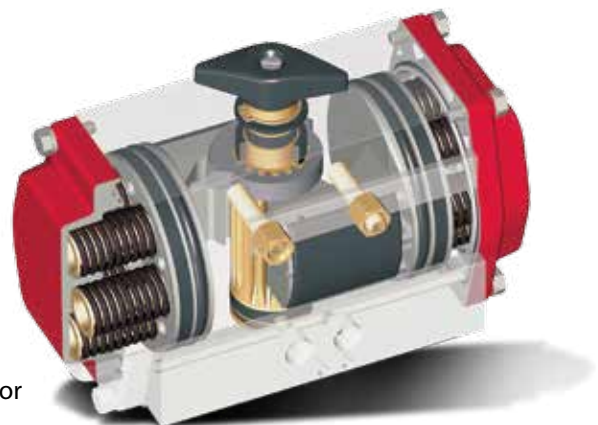


### Features and Benefits

- **Bi-Directional Travel Stops**  
*Allows for precise open/close points.*
- **IP 65 Enclosure**  
*Suitable for outdoor use, subject to ambient temperature limits.*
- **Optional Spring Cartridges**  
*Provides easy conversion from double-acting to spring return*
- **Direct-Mount Design**  
*No special hardware or mounting kits required.*
- **Varied Control Options**  
*On/Off, 3 - 15 psi pneumatic, and 4 - 20 mA electro-pneumatic.*

### MATERIALS OF CONSTRUCTION

<b>Body</b>	Extruded aluminum alloy, anodized
<b>End Caps</b>	Die cast aluminum alloy with corrosion resistant polyester coating
<b>Pistons</b>	Die cast aluminum alloy
<b>Output Shaft/Pinion</b>	Carbon Steel, zinc plated
<b>Travel Stop</b>	Alloy Steel
<b>Shaft Bearings</b>	Acetal
<b>Piston Guides</b>	Acetal
<b>Fasteners</b>	Stainless Steel
<b>Springs</b>	Spring Steel, protective coating
<b>O-Ring Seals</b>	Buna-N
<b>Options</b>	Polyester coated body exterior Electroless Nickel plated body exterior Hard Anodized body exterior Stainless Steel pinion



# Pneumatic Actuators - Series 92/93

## Actuator Torque Data (IN-LB) Spring Return

Model Number	Springs (Pairs)	Air Supply (psi)										Spring	
		40		60		80		100		120		Spring Start	Stroke End
		Start	End	Start	End	Start	End	Start	End	Start	End		
93-632	2	91	65	167	141	243	217	319	293	395	369	80	54
93-633	3	64	27	140	103	216	179	292	255	368	331	118	81
93-634	4			113	65	189	141	265	217	341	293	156	108
93-635	5			86	27	162	103	238	179	314	255	194	135
93-636	6					135	65	211	141	287	217	232	162
93-632	2	210	167	395	352	580	537	765	722	950	907	184	141
93-833	3	156	76	341	261	526	446	711	631	896	816	275	195
93-834	4			281	176	466	361	651	546	836	731	360	255
93-835	5			220	97	405	282	590	467	775	652	439	316
93-836	6					369	185	554	370	739	555	536	352
93-932	2	310	232	570	492	830	752	1089	1011	1349	1271	261	183
93-933	3	218	101	478	361	738	621	997	880	1257	1140	392	275
93-934	4			386	231	646	491	905	750	1165	1010	522	367
93-935	5			294	94	554	354	813	613	1073	873	659	459
93-936	6					462	229	721	488	981	748	784	551
93-1192	2	692	469	1249	1026	1805	1582	2362	2139	2919	2696	589	366
93-1193	3	509	174	1066	731	1622	1287	2179	1844	2736	2401	884	549
93-1194	4			883	437	1439	993	1996	1550	2553	2107	1178	732
93-1195	5			700	142	1256	698	1813	1255	2370	1812	1473	915
93-1196	6					1073	404	1630	961	2187	1518	1767	1098
93-1282	2	880	465	1622	1207	2364	1949	3106	2691	3848	3433	945	530
93-1283	3			1357	733	2099	1475	2841	2217	3583	2959	1419	795
93-1284	4			1094	261	1836	1003	2578	1745	3320	2487	1891	1058
93-1285	5					1568	529	2310	1271	3052	2013	2365	1326
93-1286	6					1302	57	2044	799	2786	1541	2837	1592
93-1602	2	1819	1118	3292	2591	4764	4063	6236	5535	7709	7008	1679	978
93-1603	3	1399	349	2872	1822	4344	3294	5816	4766	7289	6239	2448	1398
93-1604	4			2452	1123	3924	2595	5396	4067	6869	5540	3147	1818
93-1605	5			2030	353	3502	1825	4974	3297	6447	4770	3917	2240
93-1606	6					3154	1196	4626	2668	6099	4141	4546	2588
93-2102	2	3833	2508	6876	5551	9920	8595	12964	11639	16007	14682	3275	1950
93-2103	3	2859	868	5902	3911	8946	6955	11990	9999	15033	13042	4915	2924
93-2104	4			4930	2275	7974	5319	11018	8363	14061	11406	6551	3896
93-2105	5			3949	638	6993	3682	10037	6726	13080	9769	8188	4877
93-2106	6					6022	2031	9066	5075	12109	8118	9839	5848
93-2552	2	9487	6747	16967	14227	24447	21707	31926	29186	39406	36666	7464	4724
93-2553	3	7125	3015	14605	10495	22085	17975	29564	25454	37044	32934	11196	7086
93-2554	4			12243	6762	19723	14242	27202	21721	34682	29201	14929	9448
93-2555	5			9880	3030	17360	10510	24839	17989	32319	25469	18661	11811
93-2556	6					14998	6778	22477	14257	29957	21737	22393	14173

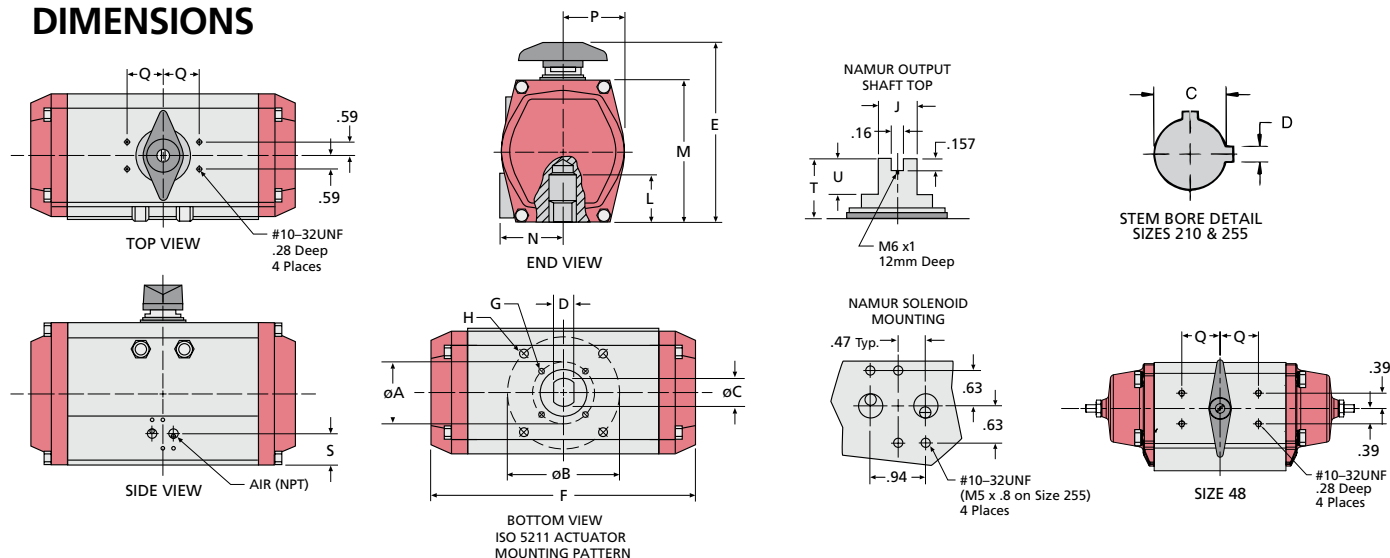
## Actuator Torque Data (IN-LB) Double Acting

Model Number	Air Supply (psi)				
	40	60	80	100	120
92-63	145	221	297	373	449
92-83	351	536	721	906	1091
92-93	493	753	1013	1272	1532
92-119	1058	1615	2171	2728	3285
92-128	1410	2152	2894	3636	4378
92-160	2797	4270	5742	7214	8687
92-210	5783	8826	11870	14914	17957
93-255	14211	21691	29171	36650	44130

Note: Assemblies are sized at 80 psi.

# Pneumatic Actuators - Series 92/93

## DIMENSIONS



## DIMENSIONS - INCHES

Size	63	83	93	119	128	160*	210	255‡
Air NPT	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
A ISO "F"†	1.97 - F 05	1.97 - F 05	1.97 - F 05	2.76 - F 07	2.76 - F 07	—	4.92 - F 12	6.50 - F 16
B ISO "F"†	2.76 - F 07	2.76 - F 07	2.76 - F 07	4.92 - F 12	4.92 - F 12	4.92 - F 12	6.50 - F 16	7.87x4.72 Rect.
C	.55	.75	.75	1.18	1.18	1.18	1.97	2.50
D	.40	.51	.51	.87	.87	.87	.47	.62
E	4.53	5.43	5.78	7.28	8.09	9.36	11.62	13.49
F	5.58	7.40	8.59	12.40	12.31	15.54	19.57	28.78
G (UNC)	1/4-20 x .32	1/4-20 x .32	1/4-20 x .32	5/16-18 x .46	5/16-18 x .46	—	1/2-13 x .78	M16x2 x 28mm
H (UNC)	5/16-18 x .40	5/16-18 x .40	5/16-18 x .40	1/2-13 x .69	1/2-13 x .69	1/2-13 x .75	5/8-11 x 1.11	M16x2 x 28mm
J	.38	.50	.50	1.12	1.12	1.12	1.12	1.12
L	1.38	1.46	1.46	2.20	2.20	2.20	4.72	6.50
M	3.46	4.27	4.61	5.52	6.32	7.80	10.16	12.06
N	1.72	2.28	2.47	2.78	2.88	3.78	4.56	5.40
P	1.38	1.79	1.97	2.37	2.70	3.39	4.41	5.39
Q	1.58	1.58	1.58	1.58	1.58	2.56	2.56	2.56
R	.89	1.26	1.32	1.64	1.64	2.26	2.45	2.48
S	.79	.79	.79	.79	.79	1.18	1.18	1.18
U	.47	.47	.47	.47	.47	.75	.75	.75

**Note:** Double Acting and Spring Return actuators have the same overall dimensions.

The double acting unit of the size 48 actuator is optionally available with flat end caps with an F dimension of 4.00

† ISO "F" means mounting flange-drilling pattern.

\* Dimensions for Size 160A in table. Size 160B (keyed stem version) has C dimension of 1.38 and D dimension of .39

‡ Dimensions for Size 255A in table. Size 255B actuator has a C dimension of 3.00 and D dimension of .75

\*\* Size 48 has a T dimension of .79 with use of NAMUR top plate.

## WEIGHTS - lbs

Size	63	83	93	119	128	160	210	255
Double Acting	3.4	6.3	8.5	16.9	21.0	38.8	77.8	167.0
Spring Return	3.98	7.8	10.4	21.4	26.5	50.8	104.1	199.0

## ACTUATOR SPEEDS

Size	63	83	93	119	128	160	210	255
Open Stroke/ Close Stroke	1/4	1/4	1/4	1/2	1/2	1	2	2-3/4

## Note:

Times shown are in seconds at 80 PSIG supply pressure with 6ft. tubing having an internal diameter of approximately 1/4". Bray S92/93 actuation times are very dependent on the flow capacity of their air supply. The use of smaller port solenoids, solenoid manifolds, smaller I.D. air supply tubing and/or extended lengths of tubing can significantly reduce the actuation time and/or initial response to the command signal.

# Pneumatic Actuators - Series 92/93

## Accessories

### Series 62 NAMUR Solenoid Valve

#### Features

Pneumatic Ports: 1/4" NPT  
 Electrical connection: NEMA Housings- 1/2" NPT  
 Manual override, standard  
 Direct mount to NAMUR standards  
 Mountable in any position  
 Mounting hardware included  
 Convertible from 4-Way (5/2) to 3-Way (3/2)  
 Available with single or dual coils  
 (Standard valves are supplied as single coil units. Dual coil units are available for actuators to remain in the last position during electrical power failures.)



#### Coil Housings

Watertight (NEMA 4, 4x), CSA recognized to U.S. and Canadian standards

#### Electrical Characteristics

##### Coil Ratings:

NEMA 4, 4x Housings- 24, 110, 220 Volts, 50-60 HZ  
 12, 24 Volts DC

#### Nominal Power (Watts)

NEMA Coil: 24 VAC, 3.0W; 110 VAC, 4.0W; 220 VAC, 5.5W  
 12 VDC, 3.0W; 24 VDC, 4.5W

**Maximum Frequency:** 5 times per minute

#### Normal Ambient Temperature Range

AC/DC- +5°F to 140°F (-15°C to +60°C)

#### Materials

Body: Anodized Aluminum  
 Spring: Phosphate treated black steel  
 Shading Coil: Copper  
 Seals: NBR + PUR  
 Core/Tube: Stainless/Brass  
 End Covers & Plate: 6/6 glass filled polyamide (PA/FV)  
 Spool: Aluminum  
 Internal Parts: Zamak, Steel, Acetal

### Pneumatic Solenoid - Series 62

Model Number	Description
621250-21440536	Single coil solenoid, 24 VAC for electric on/off control of S92/93 actuators
621250-21410536	Single coil solenoid, 110 VAC for electric on/off control of S92/93 actuators
621250-21428536	Double coil solenoid, 24 VAC for electric on/off control of S92/93 actuators
621250-21420536	Double coil solenoid, 110 VAC for electric on/off control of S92/93 actuators

### Pneumatic Positioner - V200P



### Pneumatic Positioner - V200P

Model Number	Description
V200P	Pneumatic Positioner, Double or Single Acting
V200M	Mech Aux Switch for V200P
V200R	Reed Aux Switch for V200P
V200MA	4 to 20 mA feedback module for V200P
V200MMA	Mech switch aux switch and 4 to 20 mA feedback for V200P
V200RMA	Reed Aux Switch and 4-20 mA feedback for V200P
V200B	Beacon Indicator for V200P

## Accessories

### Electro-Pneumatic Positioner - Series 6A

Bray's Series 6A Intelligent Electro-Pneumatic Positioners offer precise flow control, advanced communication and enhanced diagnostics. Utilizing proven technology, the Series 6A features rugged reliability, high quality components and outstanding performance.

Series 6A positioners are microprocessor controlled, delivering all the benefits of digital electronics. The microprocessor constantly compares the command signal to the actual valve position and makes precise, on-line adjustments until the two measurements match. The use of the piezoelectric control element results in near zero air consumption, ultra high resolution and extremely low hysteresis.

Series 6A positioners were designed with ease of installation, simple calibration, efficiency and economy in mind. The modular product line is easily customized for specific applications. Additional positioner functions may be obtained by installing optional circuit boards.



Shown with optional gauges.

#### Technical Specifications

Supply Pressure	20 - 102psi (1.4 -7 Bar)
Air Consumption	<0.00035 scfm
Input Signal	
Analog	4 -20 mADC
Bus	HART, Foundation Fieldbus, Profibus PA Connections
Supply	1/4" NPT (G 1/4")
Signal (2 conduit entries)	1/2" NPT (M20x1.5)
Resolution	<0.05%
Repeatability	0.32%
Hysteresis	<0.2%
Temperature Range	-22°F(-30°C) to +176°F(+80°C)
Weight	2.0 lbs. (0.9 kg)
Control Element Type	Piezoelectric
EMC Requirements	EN 61326/A1 Appendix A.1, NAMUR NE21 August 98
Protection Class	NEMA 4,4x and IP66
Materials	Fiberglass Reinforced Polymer with Metalized Coated interior for EMC protection
Housing Fasteners	Stainless Steel
Position Indicator	ABS polymer
Positioner Mounting	VDI/VDE 3845 (NAMUR)
Available Approvals	FM, CSA, CE, ATEX

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards.

For application at conditions beyond these specifications, consult the local Bray office.

Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

Pneumatic Positioner - Series 6A	
Model Number	Description
6A6DR5-0200NN005KA0	S6A Electro-pneumatic positioner, 4-20 mA, double-acting
6A6DR5-0100NN005KA0	S6A Electro-pneumatic positioner, 4-20 mA, single-acting
6A6DR4-0048K	S6A Optional mechanical switch
6A6DR4-0048J	S6A Optional position feedback module
S6A Gauge Block	S6A Optional gauge block assembly
6A0630-24610536	S6A Mounting kit, S92/93 sizes 63-127
6A1600-24610536	S6A Mounting kit, S92/93 sizes 160-210
6A1600-22400536	S6A Mounting kit, S92/93 sizes 210-255

# Pneumatic Actuators - Series 92/93

## Status Monitor - Series 5A

The Bray Series 5A Valve Status Monitors (VSM) provide visual and electrical indication of position on any VDI/VDE 3845 compliant quarter-turn device. Our solutions enable end users to better monitor their process no matter the conditions.



Pneumatic Status Monitor - Series 5A & (5B mounting hardware)	
Model Number	Description
5A0000-126A2536	5A Status Monitor (Mounting Bracket Not Included) SPDT Mechanical Switch, 2 Switches
5B0000-22600534	Non-Adjustable Mounting Kit - For S98 & S92/93 actuators - Sizes 063 -128
5B0000-22601534	Adjustable Mounting Kit - For S98 & S92/93 actuators - Sizes 063 -255

### Features and Benefits

- Low Profile, Weatherproof Enclosure
  - Die-cast aluminum with a polyester powder coat for exceptional corrosion, wear, impact and ultraviolet resistance.
- High Visibility Position Indicator
  - Impact resistant.
  - Flexible Mounting Options - Can be mounted both perpendicular and parallel to the actuator. The visual indication can also be inverted without removing the cover.
- Captive Cover Bolts with Protective Washers - Stainless Steel bolts with clear, nonmetallic corrosion resistant washers are used to ensure coating integrity.
- Adjustable Sensor Cams - No tools Required
- Limit Switches - Multiple Switch options and configurations to meet connectivity requirements.
- Terminals- Clearly Marked and Easily Accessed.
- Conduit Entries - Two available in either imperial or metric threads.
- Grounding- Green color-coded, easy access grounding bolt

### Certifications

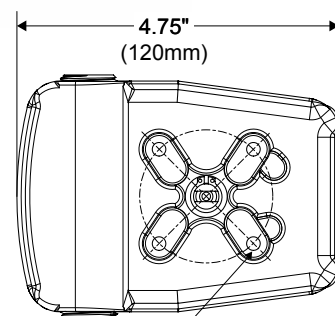
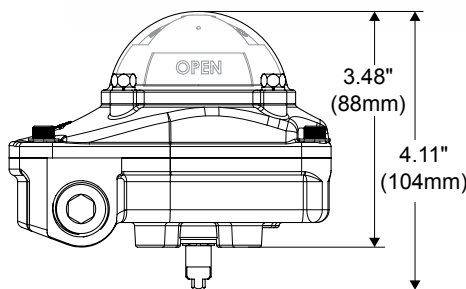
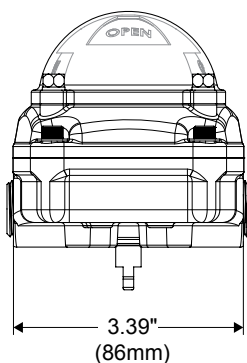
- NEMA Type 4X
- IP66/67
- cULus
- CE
- UL50E Salt Spray

### Flexible Mounting Options

Users have the ability to mount the VSM's in both perpendicular and parallel orientations without changing brackets. The visual indication can also be inverted without removing the cover. This is done by rotating the indicator dome 90 degrees.



### Series 5A Dimensions



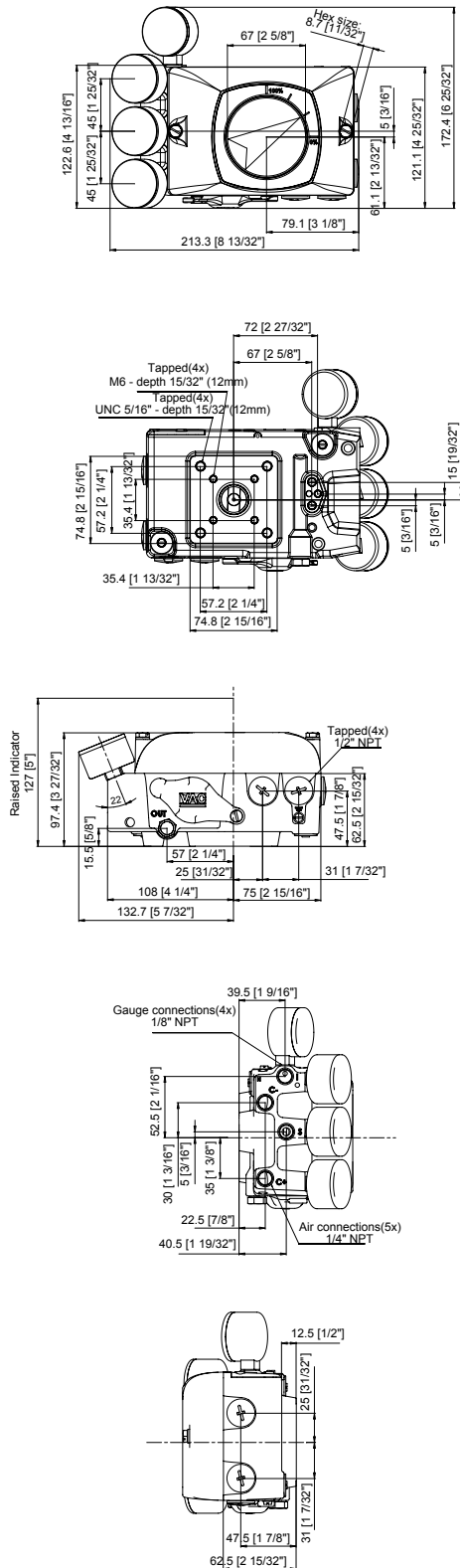
F05 Mounting Pattern



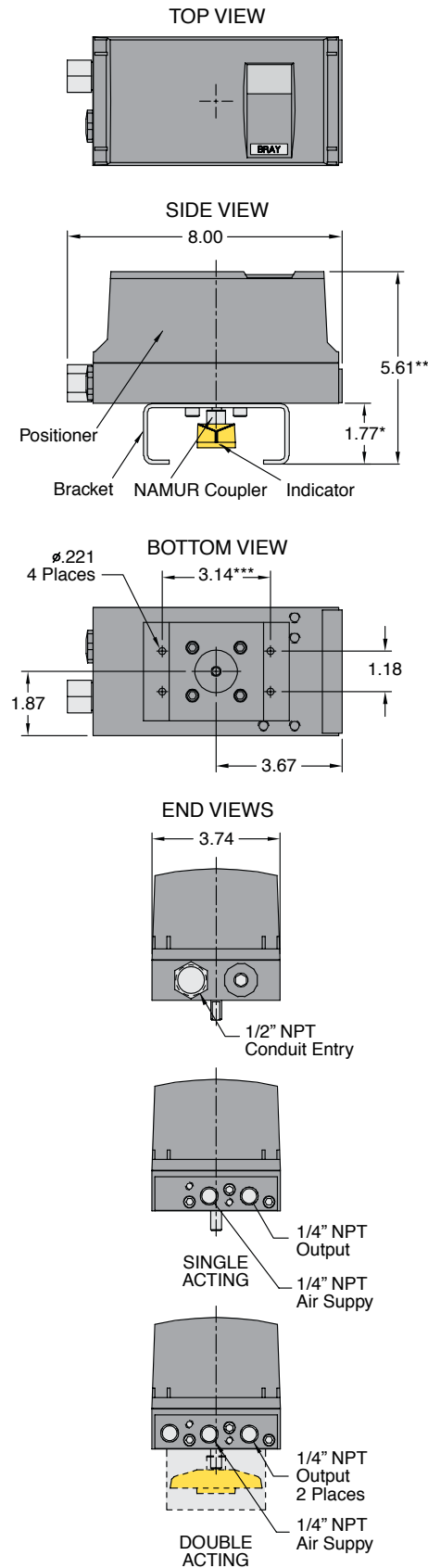
# Pneumatic Actuators - Series 92/93

## Positioner Dimensions

### V200



### 6A



# Pneumatic Actuators - Series 92/93

## Manual Overrides - Series 05

Available for 2"-36" (50mm-900mm) valves. This operator is excellent for the safe handling of spring return actuators. During pneumatic operation, the worm of the gear unit is disengaged. Should the valve require opening or closing in the event of power loss, manual rotation of the declutch lever will provide a camming action and engage the worm to the segmented worm gear, allowing rotation of the valve using the handwheel. The Series 5 can be installed in the field with existing Bray pneumatic actuators.

Size 20:1 (2,000 lb.in)					Actuator Size																
Valve					63			83			92			118			127			*H	
SIZE	A	B	C	D	E	F	G	E	F	G	E	F	G	E	F	G	E	F	G	J	K
2	2.00	1.62	6.75	2.22	2.79	5.88	1.72	3.70	6.78	2.28	4.30	7.13	2.47							1.92	8.88
2.5	2.50	1.75	7.25	2.47	2.79	5.88	1.72	3.70	6.78	2.28	4.30	7.13	2.47								
3	3.00	1.75	7.50	2.81	2.79	5.88	1.72	3.70	6.78	2.28	4.30	7.13	2.47								
4	4.00	2.00	8.25	3.41				3.70	6.78	2.28	4.30	7.13	2.47	5.95	8.63	2.78	6.16	9.44	2.88		
5	5.00	2.12	8.75	4.03				3.70	6.78	2.28	4.30	7.13	2.47	5.95	8.63	2.78	6.16	9.44	2.88		
6	6.00	2.12	9.25	4.53				3.70	6.78	2.28	4.30	7.13	2.47	5.95	8.63	2.78	6.16	9.44	2.88		

Size 30:1 (8,000 lb.in)					Actuator Size														
Valve					118			127			160			210			*H		
SIZE	A	B	C	D	E	F	G	E	F	G	E	F	G	E	F	G	J	K	
5	5.00	2.12	8.81	4.03	5.95	8.97	2.78	6.16	9.78	2.88	7.77	11.05	3.78	9.78	13.31	4.56	3.05	9.43	
6	5.75	2.12	9.31	4.53	5.95	8.97	2.78	6.16	9.78	2.88	7.77	11.05	3.78	9.78	13.31	4.56	12.00		
8	7.75	2.50	10.81	5.75	5.95	8.97	2.78	6.16	9.78	2.88	7.77	11.05	3.78	9.78	13.31	4.56			
10	9.75	2.50	12.06	7.12	5.95	8.97	2.78	6.16	9.78	2.88	7.77	11.05	3.78	9.78	13.31	4.56			
12	11.75	3.00	13.56	8.12	5.95	8.97	2.78	6.16	9.78	2.88	7.77	11.05	3.78	9.78	13.31	4.56			

Size 50:1 (13,000 lb.in)					Actuator Size											
Valve					160			210			255			*H		
SIZE	A	B	C	D	E	F	G	E	F	G	E	F	G	J	K	
10	9.75	2.50	12.56	7.12	7.77	13.74	3.78	9.78	16.00	4.56				11.81	12.00	
12	11.75	3.00	14.06	8.12	7.77	13.74	3.78	9.78	16.00	4.56						
14	13.25	3.00	15.43	9.38	7.77	13.74	3.78	9.78	16.00	4.56	14.39	18.87	5.40			
16	15.25	4.00	16.56	10.75	7.77	13.74	3.78	9.78	16.00	4.56	14.39	18.87	5.40			

Size 80:1 (24,000 lb.in)					Actuator Size											
Valve					160			210			255			*H		
SIZE	A	B	C	D	E	F	G	E	F	G	E	F	G	J	K	
14	13.25	3.00	16.12	9.38	7.77	15.61	3.78	9.78	17.12	4.56	14.39	18.99	5.40	14.88	18.00	
16	15.25	4.00	17.25	10.75	7.77	15.61	3.78	9.78	17.12	4.56	14.39	18.99	5.40			
18	17.25	4.25	18.50	12.00	7.77	15.61	3.78	9.78	17.12	4.56	14.39	18.99	5.40			
20	19.25	5.00	19.75	13.72	7.77	15.61	3.78	9.78	17.12	4.56	14.39	18.99	5.40			
22	21.25	6.06	22.62	16.50							14.39	18.99	5.40			
24	23.25	5.94	22.00	17.56							14.39	18.99	5.40			

Size 64:1 (36,000 lb.in)					Actuator Size					
Valve					255			*H		
SIZE	A	B	C	D	E	F	G	J	K	
18	17.25	4.25	19.12	9.38	14.39	19.99	5.40	14.56	24.00	
20	19.25	5.00	20.38	13.72	14.39	19.99	5.40			
24	23.25	5.94	22.62	17.56	14.39	19.99	5.40			
30	29.25	6.56	26.12	20.81	14.39	19.99	5.40			

