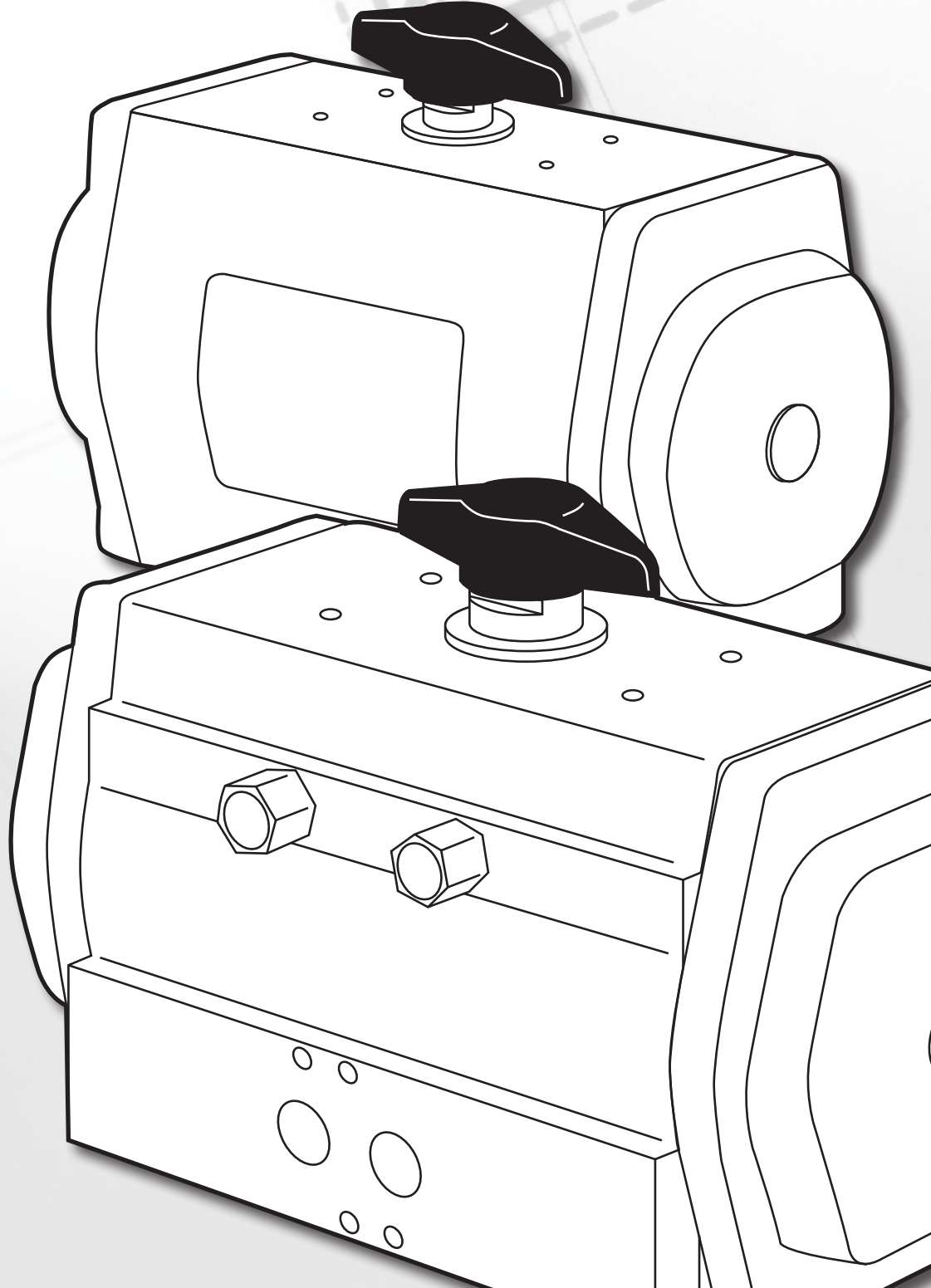


Bray[®]

Pneumatic Actuators

SALES REFERENCE DRAWINGS





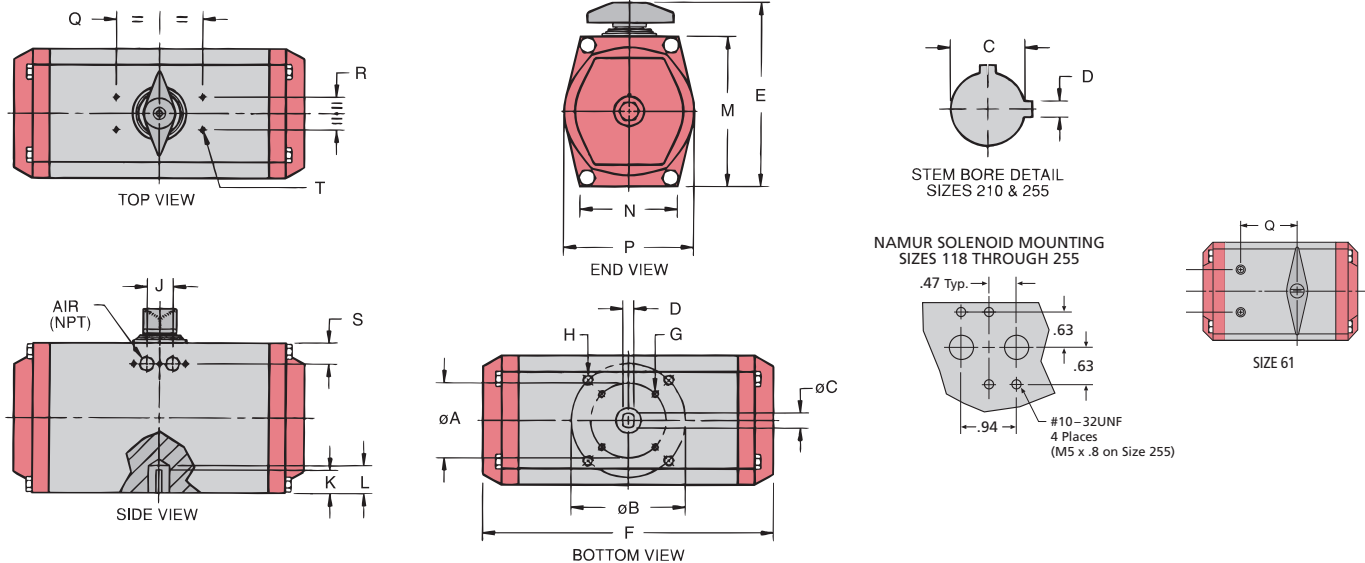
Pneumatic Actuators SALES REFERENCE DRAWINGS

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S90 Double Acting/S91 Spring Return



IMPERIAL DIMENSIONS - Inches

Size	61	63	83	92	118	127	160*	210	255‡
Air NPT	1/8	1/8	1/8	1/8	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	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	.55	.75	.75	1.18	1.18	1.18	1.97	2.50
D	.40	.40	.51	.51	.87	.87	.87	.47	.62
E	4.29	4.29	5.20	5.54	6.93	7.73	9.37	11.61	13.46
F	4.32	5.24	7.01	8.03	11.22	11.46	14.57	17.80	26.70
G (UNC)	1/4-20 x 5/16	1/4-20 x 5/16	1/4-20 x 5/16	1/4-20 x 5/16	5/16-18 x 3/8	5/16-18 x 3/8	—	1/2-13 x 9/16	5/8-11 x 3/4
H (UNC)	—	5/16-18 x 3/8	5/16-18 x 3/8	5/16-18 x 3/8	1/2-13 x 9/16	1/2-13 x 9/16	1/2-13 x 9/16	5/8-11 x 3/4	5/8-11 x 3/4
J	.87	.87	.87	.87	.94	.94	.94	.94	.94
K	—	—	—	—	—	—	—	2.76	4.25
L	1.38	1.38	1.38	1.38	2.11	2.11	2.11	4.72	6.75
M	3.46	3.46	4.27	4.61	5.52	6.32	7.80	10.04	11.89
N	2.36	2.36	2.57	2.76	4.15	4.07	4.33	5.32	6.30
P	2.76	2.76	3.58	3.94	4.72	5.39	6.77	8.83	10.75
Q	1.58	3.15	3.15	3.15	3.15	3.15	5.12	5.12	5.12
R	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18
S	.57	.57	.58	.56	.76	.84	.84	1.04	1.06
T (UNF)	No.10-32 x 1/4	No.10-32 x 1/4	No.10-32 x 1/4	No.10-32 x 1/4	No.10-32 x 1/4	No.10-32 x 1/4	No.10-32 x 1/4	No.10-32 x 1/4	No.10-32 x 1/4

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 - Spring Return unit weights are with full set of springs on each piston.

Size	61	63	83	92	118	127	160	210	255
Series 90	2.5	3.0	5.5	7.3	15.5	19.0	35.0	65.0	144.0
Series 91	2.8	3.6	7.1	9.5	19.9	25.2	49.2	95.3	192.6

Drawings are for reference only. Please refer to Bray ES drawings on the Bray website, www.bray.com. Bray reserves the right to change product dimensions without notice.

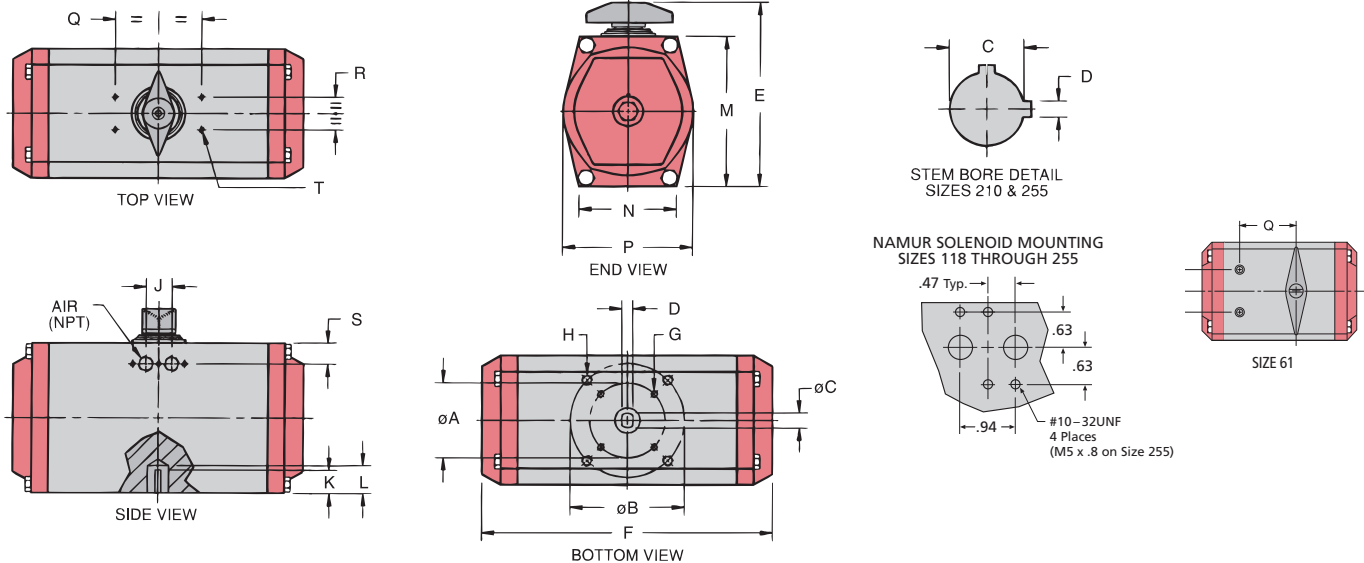
SR Drawing #90-91-i August 2012- Rev. 0

Inquire/P.O. No.: _____

Customer/Project: _____

Bray Order No.: _____

S90 Double Acting/S91 Spring Return



METRIC DIMENSIONS - Millimeters

Size	61	63	83	92	118	127	160*	210	255‡
Air NPT	1/8	1/8	1/8	1/8	1/4	1/4	1/4	1/4	1/4
A ISO "F"†	50 - F 05	50 - F 05	50 - F 05	50 - F 05	70 - F 07	70 - F 07	—	125 - F 12	165 - F 16
B ISO "F"†	—	70 - F 07	70 - F 07	70 - F 07	125 - F 12	125 - F 12	125 - F 12	165 - F 16	200 x 120 Rect.
C	14	14	19	19	30	30	30	50	64
D	10	10	13	13	22	22	22	12	16
E	109	109	132	141	176	196	238	295	342
F	110	133	178	204	285	291	370	452	678
G (UNC)	1/4-20 x 5/16	1/4-20 x 5/16	1/4-20 x 5/16	1/4-20 x 5/16	5/16-18 x 3/8	5/16-18 x 3/8	—	1/2-13 x 9/16	5/8-11 x 3/4
H (UNC)	—	5/16-18 x 3/8	5/16-18 x 3/8	5/16-18 x 3/8	1/2-13 x 9/16	1/2-13 x 9/16	1/2-13 x 9/16	5/8-11 x 3/4	5/8-11 x 3/4
J	22	22	22	22	24	24	24	24	24
K	—	—	—	—	—	—	—	70	108
L	35	35	35	35	54	54	54	120	171
M	88	88	108	117	140	161	198	255	302
N	60	60	65	70	105	103	110	135	160
P	70	70	91	100	120	137	172	224	273
Q	40	80	80	80	80	80	130	130	130
R	30	30	30	30	30	30	30	30	30
S	14	14	15	14	19	21	21	26	27
T (UNF)	No.10-32 x 1/4	No.10-32 x 1/4	No.10-32 x 1/4	No.10-32 x 1/4	No.10-32 x 1/4	No.10-32 x 1/4	No.10-32 x 1/4	No.10-32 x 1/4	No.10-32 x 1/4

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 102mm.

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

* Dimensions for Size 160A in table. Size 160B (keyed stem version) has C dimension of 35mm and D dimension of 10mm.

‡ Dimensions for Size 255A in table. Size 255B actuator has a C dimension of 76mm and D dimension of 19mm.

** Size 48 has a T dimension of 20mm with use of NAMUR top plate.

WEIGHTS - Kilograms - Spring Return unit weights are with full set of springs on each piston.

Size	61	63	83	92	118	127	160	210	255
Series 90	1.1	1.4	2.5	3	7	9	16	29	65
Series 91	1.3	1.6	3.2	4	9	11	22	43	87

Drawings are for reference only. Please refer to Bray ES drawings on the Bray website, www.bray.com. Bray reserves the right to change product dimensions without notice.

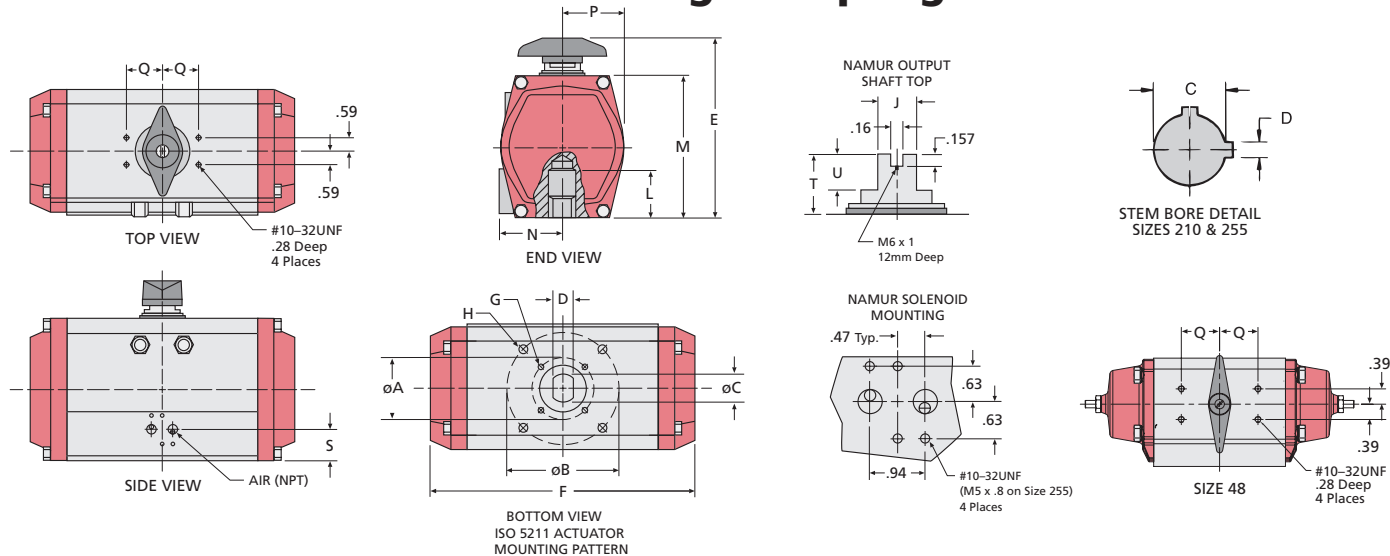
SR Drawing #90-91-m August 2012- Rev. 0

Customer/Project: _____

Inquire/P.O. No.: _____

Bray Order No.: _____

S92 Double Acting/S93 Spring Return



IMPERIAL DIMENSIONS - Inches

Size	48	63	83	93	119	128	160*	210	255‡
Air NPT	1/8	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
A ISO "F"†	1.42 - F 03	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"†	1.97 - F 05	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	.55	.75	.75	1.18	1.18	1.18	1.97	2.50
D	.40	.40	.51	.51	.87	.87	.87	.47	.62
E	3.88	4.53	5.43	5.78	7.28	8.09	9.36	11.62	13.49
F	4.38	5.58	7.40	9.10	12.40	12.81	15.54	19.57	28.78
G (UNC)	10-32 x .23	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)	1/4-20 x .25	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	.38	.50	.50	1.12	1.12	1.12	1.12	1.12
L	1.38	1.38	1.46	1.46	2.20	2.20	2.20	4.72	6.50
M	2.50	3.46	4.27	4.61	5.52	6.32	7.80	10.16	12.06
N	1.60	1.72	2.28	2.47	2.78	2.88	3.78	4.56	5.40
P	1.18	1.38	1.79	1.97	2.37	2.70	3.39	4.41	5.39
Q	.98	1.58	1.58	1.58	1.58	1.58	2.56	2.56	2.56
S	1.25	.89	1.26	1.32	1.64	1.64	2.26	2.45	2.48
T	1.10**	.79	.79	.79	.79	.79	1.18	1.18	1.18
U	.47	.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 - Spring Return unit weights are with full set of springs on each piston.

Size	48	63	83	93	119	128	160	210	255
Double Acting	2.0	3.4	6.3	8.5	16.9	21.0	38.8	77.8	167.0
Spring Return	2.4	4.10	8.1	10.8	22.3	27.6	53.2	109.6	210.8

Drawings are for reference only. Please refer to Bray ES drawings on the Bray website, www.bray.com. Bray reserves the right to change product dimensions without notice.

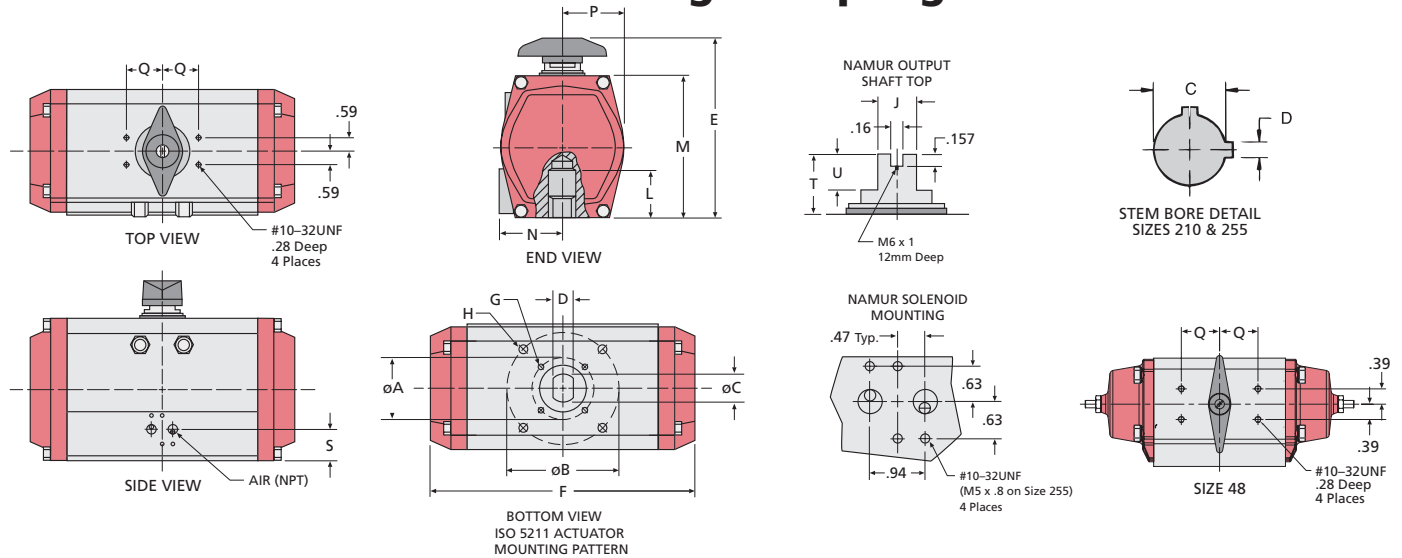
SR Drawing #92-93-i May 2013- Rev. 1

Customer/Project: _____

Inquire/P.O. No.: _____

Bray Order No.: _____

S92 Double Acting/S93 Spring Return



METRIC DIMENSIONS - Millimeters

Size	48	63	83	93	119	128	160*	210	255‡
Air NPT	1/8	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
A ISO "F"†	36 - F 03	50 - F 05	50 - F 05	50 - F 05	70 - F 07	70 - F 07	—	125 - F 12	165 - F 16
B ISO "F"†	50 - F 05	70 - F 07	70 - F 07	70 - F 07	125 - F 12	125 - F 12	125 - F 12	165 - F 16	200 x 120 Rect.
C	14	14	19	19	30	30	30	50	64
D	10	10	13	13	22	22	22	12	16
E	99	115	138	147	185	205	238	295	343
F	111	142	188	231	315	254	395	497	731
G (UNC)	10-32 x .23	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)	1/4-20 x .25	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	10	10	13	13	28	28	28	28	28
L	35	35	37	37	56	56	56	120	165
M	64	88	108	117	140	161	198	258	306
N	41	44	58	63	71	73	96	116	137
P	30	35	45	50	60	69	86	112	137
Q	25	40	40	40	40	40	65	65	65
S	32	23	32	34	42	42	57	62	63
T	28**	20	20	20	20	20	30	30	30
U	12	12	12	12	12	12	19	19	19

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 102mm
† ISO "F" means mounting flange-drilling pattern.

* Dimensions for Size 160A in table. Size 160B (keyed stem version) has C dimension of 35mm and D dimension of 10mm

‡ Dimensions for Size 255A in table. Size 255B actuator has a C dimension of 76mm and D dimension of 19mm

** Size 48 has a T dimension of 20mm with use of NAMUR top plate.

WEIGHTS - Kilograms - Spring Return unit weights are with full set of springs on each piston.

Size	48	63	83	93	119	128	160	210	255
Double Acting	0.9	1.5	3	4	8	10	18	35	76
Spring Return	1.1	1.9	4	5	10	13	24	50	96

Drawings are for reference only. Please refer to Bray ES drawings on the Bray website, www.bray.com. Bray reserves the right to change product dimensions without notice.

SR Drawing #92-93-m May 2013- Rev. 1

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