

Valve Actuators



MASTERGEAR® U.S.A.

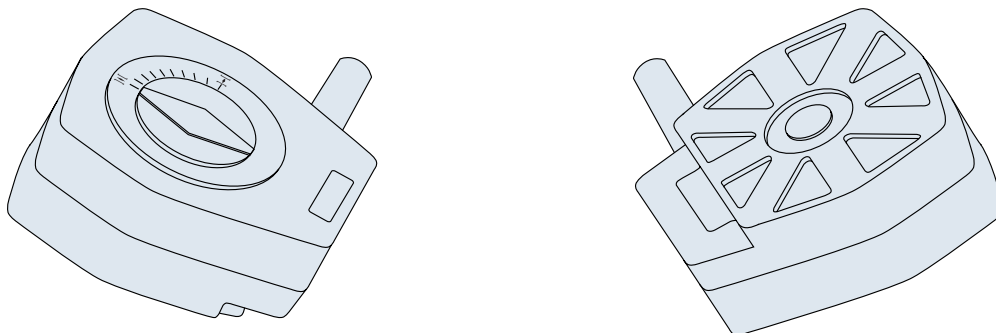
Division of REGAL-BELOIT CORPORATION



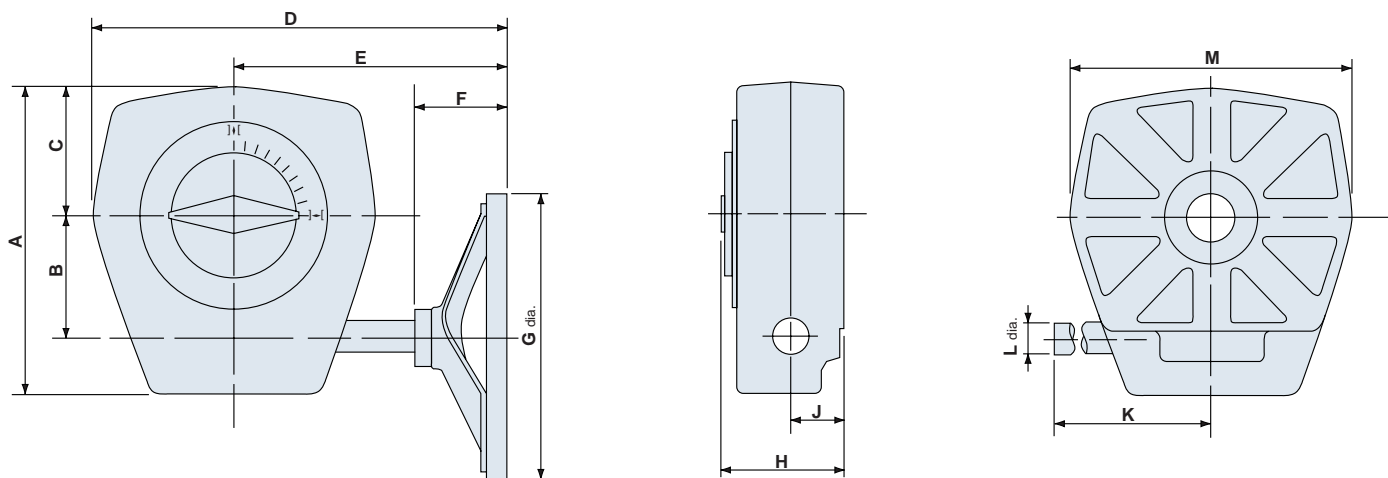
98 Series Aluminum

1/4 Turn Gearboxes for Manual Operation

Output torques listed below have a safety factor which allows the actuator to withstand occasional overloads of twice the rated torque. Mechanical efficiency is high which reduces the required input effort and small, space-saving handwheels can be used. Two self-locking adjustable stopscrews give $\pm 5^\circ$ adjustment at each end of 90° travel and are sealed after adjustment.



The enclosure is fully weatherproofed using 'O' rings. All rotating parts are grease lubricated for life. External aluminum surfaces are protected with chromate finish; other protective coatings are available to suit particular applications. Temperature range -68°F to $+176^\circ\text{F}$.



Performance

Unit Ref.	Output torque (max.)	Ratio	Mech. Adv.	Input torque (max.)	Handwheel rim effort (max.)	Weight
980	1106 in. lbs. 125 Nm	40:1	13.00	85 in. lbs. 9.6 Nm	34 lbs. 151 N	3 lbs. 1.4 Kg.
981	2000 in. lbs. 226 Nm	28:1	7.52	266 in. lbs. 30 Nm	67 lbs. 298 N	4.5 lbs. 2 Kg.
984	3500 in. lbs. 395 Nm	40:1	10.74	326 in. lbs. 36.8 Nm	82 lbs. 365 N	7 lbs. 3 Kg.
987	7000 in. lbs. 790 Nm	40:1	11.49	609 in. lbs. 68.8 Nm	94 lbs. 418 N	13 lb. 6 Kg.

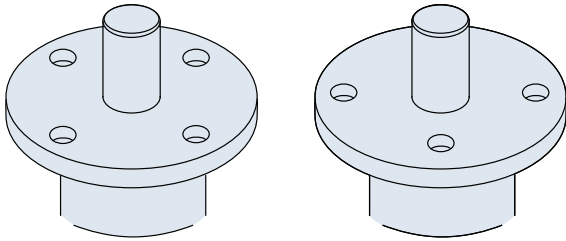
Dimensions

	A	B	C	D	E	F	G	H	J	K	L	M
ins	4.23	1.52	1.81	7.20	5.30	2.36	4.92	2.18	1.04	3.82	0.469/0.472	3.86
mm	107,5	38,5	46,0	183,0	134,0	60,0	125,0	55,3	26,5	97,0	11,92/12,00	98,0
ins	5.19	1.831	2.19	9.25	7.09	2.75	8.00	2.38	1.13	5.00	0.625/0.623	4.82
mm	132,0	46,5	55,5	235,0	180,1	69,8	203,2	60,4	28,7	127,0	15,87/15,82	122,4
ins	5.93	2.358	2.43	10.78	8.09	2.75	8.00	2.38	1.13	6.00	0.625/0.623	5.38
mm	150,6	60,0	61,7	273,8	205,5	69,81	203,2	60,4	28,7	152,4	15,87/15,82	136,6
ins	7.50	3.000	3.12	13.44	10.00	4.25	13.00	2.73	1.31	6.75	0.750/0.748	6.88
mm	190,5	76,2	79,2	341,4	254,0	108,0	330,2	69,3	33,3	171,4	19,05/19,00	175,0

The actuator may either be tapped to suit valve flanges with through holes, or fitted with an adaptor plate for securing to tapped holes in the valve top. Tapping of the actuator base may be done by Mastergear, a distributor or an end user. Actuator bases can be tapped in accordance with ISO 5211/1 (Part turn valve actuator attachment - flange dimensions), as listed in the table below.

Valve Top Variations

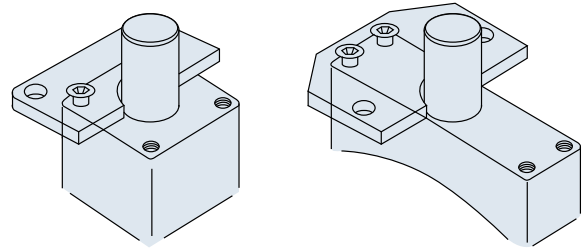
Through Hole Valve Flanges



Off-Center Lines

On-Center Lines

Tapped Valve Tops with Adaptor Plate



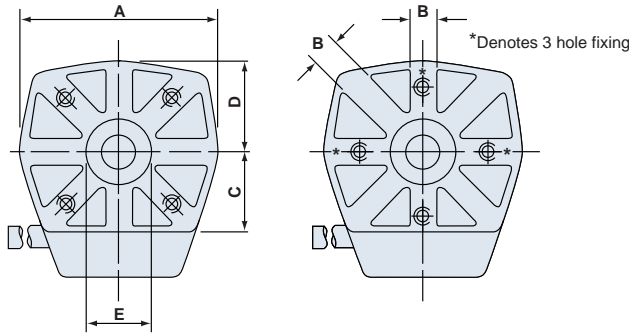
Square Form

Extended Form

Adaption methods, other than those illustrated, can be designed and manufactured to suit any type of valve.

Actuator Base Fixing

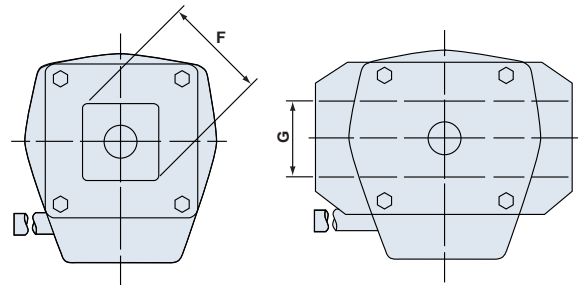
Base Hole Tapping



Off-Center Lines

On-Center Lines

Mounting Adaptor Plates



Square Adaptor

Extended Adaptor

Tappings can be machined within max. and min. bolt circles listed in the table below.

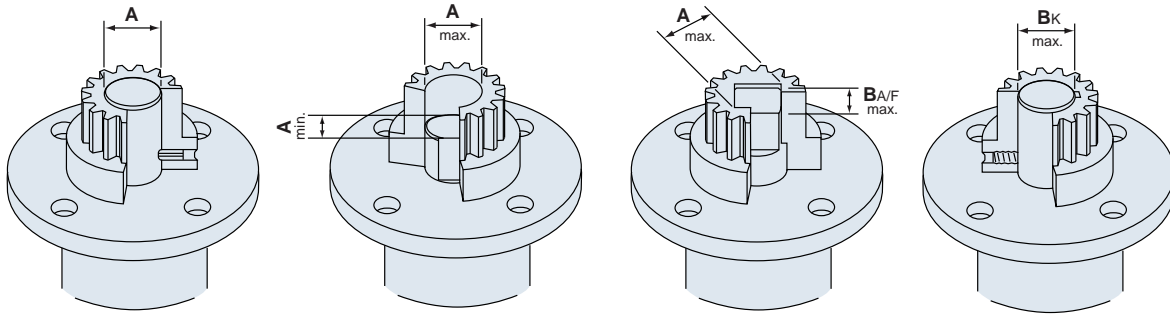
Valve top profile may vary within the parameters listed in the table. Adaptor plates can be manufactured to suit the particular valve top.

Base Fixing Dimensions

Unit Ref.	A	B	C	D	E dia.	F max.	G max.	Adaptor plate thickness	Thread dia. max.	Thread depth max.	Off center bolt circle min. max.	On center bolt circle min. max.	3 hole fixing min. max.	ISO 5211 fixings
980	ins 3.86 mm 98,0	ins 0.69 mm 17,5	ins 1.57 mm 40,0	ins 1.81 mm 46,0	ins 1.5019/1.5000 mm 38,15/38,10	ins 3.12 mm 79,2	ins 2.00 mm 50,8	0.25 6,3	3/8UNC M10	0.472 12,0	ins 1.97 2.75 mm 50,0 70,0	ins 2.12 2.50 mm 54,0 63,5	ins 2.12 2.87 mm 54,0 73,0	F05 F07 F05 F07
981	ins 4.82 mm 122,4	ins 0.86 mm 21,8	ins 1.95 mm 49,5	ins 2.19 mm 55,6	ins 1.5018/1.5000 mm 38,15/38,10	ins 3.46 mm 88,0	ins 2.16 mm 55,0	0.25 6,3	1/2UNC M12	0.60 15,2	ins 2.250 4.500 mm 57,1 114,3	ins 2.250 3.000 mm 57,1 76,2	ins 2.250 3.500 mm 57,1 88,9	F05 F07 F10 F05 F07 F10
984	ins 5.38 mm 136,6	ins 0.86 mm 21,8	ins 2.25 mm 57,1	ins 2.43 mm 61,7	ins 1.8768/1.8750 mm 47,67/47,62	ins 4.13 mm 105,0	ins 2.68 mm 68,0	0.25 6,3	1/2UNC M12	0.60 15,2	ins 2.625 5.000 mm 66,7 127,0	ins 2.625 3.750 mm 66,7 95,2	ins 2.625 4.000 mm 66,7 101,6	F07 F10 F12 F07 F10 F12
987	ins 6.88 mm 175,0	ins 1.00 mm 25,4	ins 2.81 mm 71,4	ins 3.12 mm 79,2	ins 2.6270/2.6250 mm 66,73/66,67	ins 5.50 mm 140,0	ins 3.54 mm 90,0	0.25 6,3	5/8UNC M16	0.68 17,3	ins 3.625 6.500 mm 92,0 165,1	ins 3.625 4.500 mm 92,0 114,3	ins 3.625 4.750 mm 92,0 120,6	F10 F12 F14 F10 F12 F14

A removable splined bushing, which may be machined to suit any shape of valve stem, gives maximum versatility for coupling to the valve. This bushing may be machined by Mastergear, a distributor, or an end user. An indexing spline tooth on the drive bushing ensures assembly in one angular position only. By removing the top of the indexing tooth, a simple filing operation, other angular positions may be achieved.

Valve Stem Variations (with actuator drive bushing fitted)



Plain Stem

Flatted Stem
("Double D")

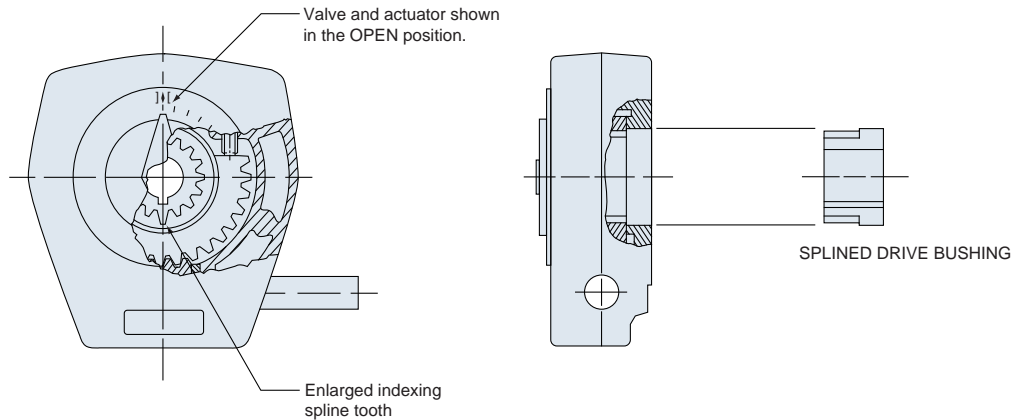
Square Stem

Keyed Stem

Drive and axial retention of the drive bushing is achieved by a dowel or spring tension pin.

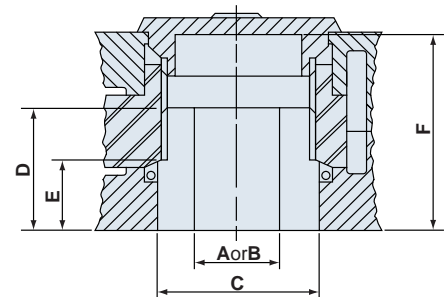
Axial retention of the drive bushing can be achieved by any of the following methods: valve flange or adaptor face; valve stem shoulder; set screw in drive bushing.

Drive Bushing Indexing



Coupling Dimensions

Unit Ref.		Dia. A max.	Dia. A min.	Dia. B _K max.	Dia. B _{A/F} max.	C dia.	D	E	F max.
980	ins mm	1.125 28,6	0.375 9,5	1.000 25,4	0.795 20,2	1.500 38,1	1.38 35,1	0.765 19,4	2.01 51,0
981	ins mm	1.125 28,6	0.375 9,5	1.000 25,4	0.795 20,2	1.500 38,1	1.38 35,1	0.765 19,4	2.4 60,9
984	ins mm	1.375 35,0	0.500 12,7	1.250 31,8	0.972 24,7	1.875 47,6	1.38 35,1	0.765 19,4	2.24 57,0
987	ins mm	2.000 50,8	0.625 15,9	1.750 44,4	1.414 36,0	2.625 66,7	1.88 47,7	0.850 21,6	2.52 64,0



Mastergear gear operators are totally-enclosed, lubricated-for-life units suitable for attachment to valves and other equipment requiring 90 degree rotation. The proven design, strong materials, and quality manufacture of Mastergear units ensure their long, trouble-free life, even when subjected to extreme overloads. Thrust bearings on the input provide easy operation and the units feature adjustable stopscrews for precise setting to the valve's closure.

Environmentally adaptable, Mastergear valve actuators can be specified for applications requiring weatherproofing, marinizing and low temperature operations.

Accessories include handwheels, memory stops, input padlocking flanges and flag indicators.

Contact Mastergear with your inquiries about special applications or feature requirements.





11447 Second Street; Roscoe, IL 61073
Phone: **1-800-722-7643 • 815-623-2716**
Fax: **815-623-6635**