

Product Bulletin

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1078 Manual Actuator

Fisher® 1078 Declutchable Manual Actuator

Fisher® 1078 manual actuators, figures 1 and 2, are declutchable actuators for manual operation of control valves and equipment that use power actuators. The 1078 manual actuator mounts directly to Fisher 1051 sizes 33, 40, and 60; 1052 sizes 33, 40, 60, and 70; 1061 sizes 30, 40, 60, 68, 80, and 100; and to all sizes of 1066 and 1066SR actuators.

For 1051 size 33, 1052 size 33, 1066, and 1066SR actuators, coupling to the power actuator is via a flattened shaft installed in the lever or hub. The dimensions of these shafts are the same as those used with H mounting adaptations. The stub shaft fits into a square broach in the manual actuator sector, and spacers secure the shaft in the appropriate position.



W6244-1/IL

Figure 1. Fisher® 1078 Declutchable Manual Actuator Mounted on a 1052 Size 33 Actuator (Standard Construction)



W6283/IL

Figure 2. Fisher® 1078 Declutchable Manual Actuator Mounted on a 1052 Size 40 Actuator and V500 Valve (Optional Construction)



Specifications

Available Configurations

Direct and reverse acting; see Handwheel Rotation and the Ordering Information section, (Standard construction is with the handwheel shaft pointing down away from the power actuator as shown in figure 1)

Manual Actuator Sizes

See tables 1, 2, 3 and 4
See figures 4 and 5 for dimensions

Coupling Shaft Diameters

See tables 1, 2, 3 and 4

Power Actuator Compatibility

See tables 1, 2, 3 and 4

Maximum Torque Output

See tables 1, 2, 3 and 4

Wheel-Rim Force

See tables 1, 2, 3 and 4

Handwheel Rotation

Clockwise handwheel rotation closes the valve. Direct-acting units produce output rotation matching input rotation; reverse-acting units produce output rotation opposite input rotation.

Construction Materials

Housing and Cover: Cast iron
Drive Sleeve/Gear (Sector): Aluminum/bronze
Worm Gear: Heat-treated steel
Input Shaft and Eccentric: Low-carbon steel
Pin Detent: 300 Series stainless steel
Handwheel or Input Shaft Bearings: Bronze

Standard Mounting Positions

- 1051 (size 33) or 1052 (size 33): Handwheel down (see figure 1)
- 1051 (size 40 and 60) (see figure 2) or 1052 (size 40, 60, and 70)⁽¹⁾: Handwheel down (std) or handwheel right-hand or left-hand mount (optional)
- 1061 (sizes 30, 40, 60, 68, 80, and 100)⁽¹⁾: Handwheel down (std) or handwheel right-hand or left-hand mount (optional)
- 1066 or 1066SR: Handwheel to left (see figure 3) or, with a 67AFR, handwheel down

Approximate Weight Without Handwheel

- Size AAA:** 2.7 kg (6 pounds)
- Size AA:** 6.8 kg (15 pounds)
- Size A:** 9.5 kg (21 pounds)
- Size 2A:** 13.6 kg (30 pounds)
- Size 1A:** 15.9 kg (35 pounds)
- Size B:** 23.1 kg (51 pounds)
- Size C:** 29.9 kg (66 pounds)
- Size D:** 63.5 kg (140 pounds)
- Size II-FA:** 81.6 kg (180 pounds)

Handwheel Weight

- 6-inch:** 1.8 kg (4 pounds)
- 8-inch:** 2.3 kg (5 pounds)
- 12-inch:** 3.2 kg (7 pounds)
- 16-inch:** 6.8 kg (15 pounds)
- 24-inch:** 5.4 kg (12 pounds)
- 30-inch:** 6.4 kg (14 pounds)
- 36-inch:** 7.3 kg (16 pounds)

1. If a positioner is used, the right-hand or left-hand mounting option will be limited to the side away from the positioner.

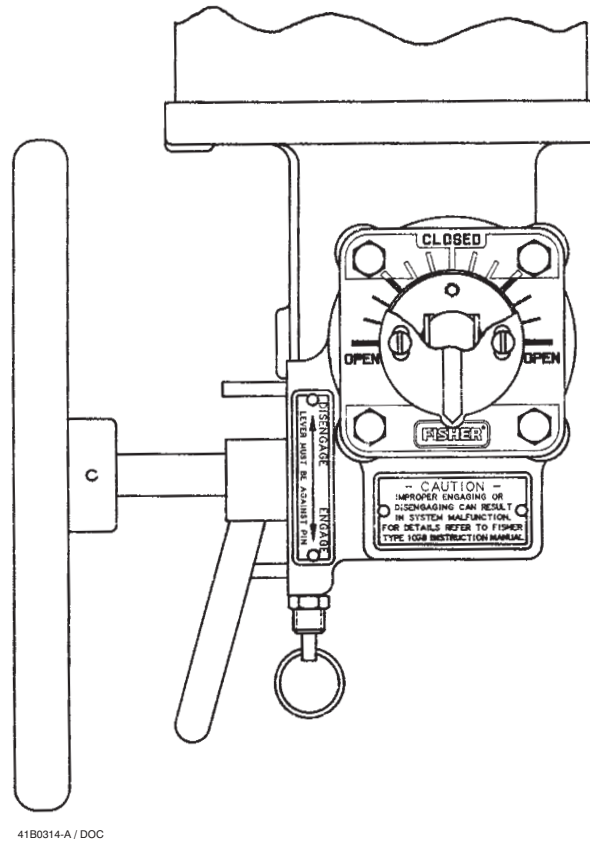


Figure 3. Fisher® 1078 Declutchable Manual Actuator Mounted on a 1066 Actuator

Features

- **Direct Attachment to the Power**

Actuator—Direct mounting to the actuator housing simplifies installation and eliminates the need for yokes and other brackets.

- **Engage Manual Actuator At Any Point of Rotation**—A lever-operated eccentric bearing support on the input shaft allows engagement of the worm gear with the sector at any point of rotation. Because the travel indicator components are mounted on a through shaft, accurate travel

indication is maintained during manual actuator disengagement or engagement.

- **Positive Operation**—The disengagement lever is locked in both the engaged and disengaged positions by a detent mechanism, which must be released before the lever can be moved. This provision reduces the possibility of inadvertent or accidental operation. In addition, stop-pins at the fully engaged and fully disengaged positions provide positive limits for lever travel. (Note that stop pins are not available on 1078 size II-FA actuators.)

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Table 1. Fisher® 1051, 1052, and 1066SR Actuator Size Selection and Specifications for Sizes AAA, AA, and A

MANUAL ACTUATOR SIZE (max output torque)	SHAFT SIZE ⁽¹⁾		POWER ACTUATOR ⁽²⁾		STANDARD HANDWHEEL DIAMETER		MAXIMUM TORQUE ⁽³⁾		WHEEL-RIM-FORCE				HAND-WHEEL TURNS FOR ROTATION	
									For Maximum Torque		For Less Than Maximum Torque		Degrees	
	mm	Inch	Type	Size	mm	Inch	N•m	Lbf•in	N	Pounds	N	Pounds	60	90
AAA (2400 in.lbs)	12.7	1/2	1051	33	305	12	143	1271	157	35	Divide N•m req'd by 0.91	Divide lbf•in req'd by 36	4	6
	15.9	5/8					223	1981	245	55				
	19.1	3/4	271	2400			298	67						
	(22.2, 25.4)	(7/8, 1)					190	1681	209	47				
	12.7	1/2	1052	33			270	2391	297	66				
	15.9	5/8						271	2400	298	67			
	19.1	3/4					271	2400	298	67				
	(22.2, 25.4)	(7/8, 1)												
	12.7	1/2	1066SR	20			169	1495	186	42				
	15.9	5/8						249	2205	274	61			
	19.1	3/4					271	2400	298	67				
	(22.2, 25.4)	(7/8, 1)					271	2400	298	67				
AA (4800 in.lbs)	12.7	1/2	1066SR	27	305	12	283	2515	218	49	Divide N•m req'd by 1.3	Divide lbf•in req'd by 51	5.7	8.5
	15.9	5/8					363	3225	279	63				
	19.1	3/4					464	4120	357	81				
	(22.2, 25.4)	(7/8, 1)					541	4800	416	94				
A (8200 in.lbs)	12.7	3/4	1066SR	75	610	24	717	6350	299	66	Divide N•m req'd by 2.4	Divide lbf•in req'd by 96	5.3	8
	22.2	(7/8, 1)					926	8200	385	85				
	(25.4, 31.8)	(1-1/4, 1-1/2)					926	8200	385	85				
	(31.8, 38.1)	(1-1/4, 1-1/2)												

1. Requires flatted shaft as in the H mounting adaptation.
 2. Field conversion of actuators for F and G mounting adaptations requires installation of new parts. The 1051 or 1052 Size 33 actuator requires installation of appropriate lever and stub shaft. The 1066 actuator requires installation of appropriate hub assembly.
 3. Compare table value with torque requirements of the valve plus the torque required to compress the power actuator spring (from Fisher Catalog 14). Note that dynamic torque of the valve may have a positive or negative effect on total torque required.

Table 2. Fisher® 1066 Actuator Size Selection and Specifications for Sizes AAA, AA, and A

MANUAL ACTUATOR SIZE (max output torque)	SHAFT SIZE ⁽¹⁾		POWER ACTUATOR ⁽²⁾		STANDARD HANDWHEEL DIAMETER		MAXIMUM TORQUE ⁽³⁾		WHEEL-RIM-FORCE				HANDWHEEL TURNS FOR ROTATION	
									For Maximum Torque		For Less Than Maximum Torque		Degrees	
	mm	Inch	Type	Size	mm	Inch	N•m	Lbf•in	N	Pounds	N	Pounds	60	90
AAA (2400 in.lbs)	12.7	1/2	1066	20	305	12	58	515	62	14	Divide N•m req'd by 0.91	Divide lbf•in req'd by 36	4	6
	15.9	5/8					138	1225	151	34				
	19.1	3/4					239	2120	262	59				
	(22.2, 25.4)	(7/8, 1)					271	2400	298	67				
AA (4800 in.lbs)	12.7	1/2	1066	27	305	12	58	515	44	10	Divide N•m req'd by 1.3	Divide lbf•in req'd by 51	5.7	8.5
	15.9	5/8					138	1225	106	24				
	19.1	3/4					239	2120	182	41				
	(22.2, 25.4)	(7/8, 1)					467	4140	360	81				
A (8200 in.lbs)	12.7	3/4	1066	75	610	24	239	2120	98	22	Divide N•m req'd by 2.4	Divide lbf•in req'd by 96	5.3	8
	22.2	(7/8, 1)					467	4140	191	43				
	(25.4, 31.8)	(1-1/4, 1-1/2)					926	8200	385	85				
	(31.8, 38.1)	(1-1/4, 1-1/2)												

1. Requires flatted shaft as in the H mounting adaptation.
 2. Field conversion of actuators for F and G mounting adaptations requires installation of new parts. The 1066 actuator requires installation of appropriate hub assembly.
 3. Compare table value with torque requirements of the valve (from Fisher Catalog 14). Note that dynamic torque of the valve may have a positive or negative effect on total torque required.

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Table 3. Fisher® 1051 and 1052 Actuator Size Selection and Specifications for Sizes 2A, 1A, B, and C

MANUAL ACTUATOR SIZE (max output torque)	SHAFT SIZE		POWER ACTUATOR ⁽¹⁾		STANDARD HAND-WHEEL DIAMETER		MAXIMUM TORQUE ⁽²⁾		WHEEL-RIM-FORCE				HANDWHEEL TURNS FOR ROTATION	
									For Maximum Torque		For Less Than Maximum Torque		Degrees	
	mm	Inch	Type	Size	mm	Inch	N•m	Lbf•in	N	Pounds	N	Pounds	60	90
2A (4800 in.lbs)	12.7	1/2	1051 1052	40	203	8	380	3365	441	99	Divide N•m req'd by 0.86	Divide lbf•in req'd by 34	5.7	8.5
	15.9, 14.3x 9.5	5/8, 9/16x 5/8			305	12	460	4075	354	80	Divide N•m req'd by 1.3	Divide lbf•in req'd by 51		
	19.1	3/4 ⁽⁴⁾					541	4800	416	94				
	(22.2, 25.4)	(7/8,1)					467 ⁽⁴⁾	4140 ⁽⁴⁾	360	81				
	31.8	1-1/4			1051 1052	40	305	12	541	4800	416	94		
	12.7	1/2	429	3795					330	74				
	15.9, 14.3x 9.5	5/8, 9/16x 5/8	509	4505					392	88				
	19.1	3/4 ⁽³⁾	541	4800					416	94				
	(22.2, 25.4)	(7/8,1)	467 ⁽⁴⁾	4140 ⁽⁴⁾					360	81				
	31.8	1-1/4	1051 1052				541	4800	416	94				
1A (8200 in.lbs)	19.1	3/4	1051 1052	40 60	610	24	929	8200	378	85	Divide N•m req'd by 2.4	Divide lbf•in req'd by 96	5.3	8
	(22.2, 25.4)	(7/8,1)												
	31.8	1-1/4	1051 1052	40 60										
	31.8, 28.6x 31/8	1-1/4, 1-1/8x 1-1/4	1051 1052	60 70 ⁽⁵⁾										
	38.1 31.8x 38.1	1-1/2, 1-1/4x 1-1/2												
	(44.4, 50.8), 39.7 x44.5	(1-3/4, 2), 1-9/16 x1-3/4												
	B (12,000 in.lbs)	31.8	3/4	1051 1052										
		7/8-1												
38.1, (44.4, 50.8)		1-1/4, (1-3/4, 2)												
C (18,000 in.lbs)	31.8	1-1/4	1051 1052	60 70	610	24	1735	15,355	361	79	Divide N•m req'd by 4.8	Divide lbf•in req'd by 194	9	13.5
							1839	16,275	383	84				
							2034	18,000	414	93				
							2034	18,000	414	93				

1. Field conversion of actuators for F and G mounting adaptations requires installation of new parts. The 1051 or 1052 Size 33 actuator requires installation of appropriate lever and stub shaft.
 2. Compare table value with torque requirements of the valve plus the torque required to compress the power actuator spring (from Fisher Catalog 14). Note that dynamic torque of the valve may have a positive or negative effect on total torque required.
 3. 2A 3/4 inch shaft will also mount on the 1051 and 1052 size 60.
 4. Maximum torque of connection between power and manual actuator.
 5. If mounted on the 1051 and 1052 Size 70, the Travel is for only 60 Degrees.

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Table 4. Fisher® 1061 Actuator Size Selection and Specifications for Sizes 2A, 1A, B, C, D, and II-FA

MANUAL ACTUATOR SIZE (max output torque)	SHAFT SIZE		POWER ACTUATOR		STANDARD HAND-WHEEL DIAMETER		MAXIMUM TORQUE ⁽¹⁾		WHEEL-RIM-FORCE				HANDWHEEL TURNS FOR ROTATION			
									For Maximum Torque		For Less Than Maximum Torque		Degrees			
	mm	Inch	Type	Size	mm	Inch	N•m	Lbf•in	N	Pounds	N	Pounds	60	90		
2A (4800 in.lbs)	12.7	1/2	1061	30	152	6	58	515	89	20	Divide N•m req'd by 0.66	Divide lbf•in req'd by 26	5.7	8.5		
	15.9, 14.3x 9.5	5/8, 9/16x 5/8					138	1225	214	48						
	19.1	3/4 ⁽³⁾					203	8	239	2120	276	62			Divide N•m req'd by 0.86	Divide lbf•in req'd by 34
	(22.2, 25.4)	(7/8,1)					305	12	467 ⁽⁴⁾	4140 ⁽⁴⁾	360	81			Divide N•m req'd by 1.3	Divide lbf•in req'd by 51
	31.8	1-1/4							541	4800	416	94				
1A (8200 in.lbs)	19.1	3/4	1051, 1061	40, 60, 68	305	12	239	2120	276	62	Divide N•m req'd by 1.2	Divide lbf•in req'd by 48	5.3	8		
	(22.2, 25.4)	(7/8,1)	1061				467	4140	382	86						
	31.8, 28.6x 31/8	1-1/4, 1-1/8x 1-1/4	1061	40, 60, 68	610	24	929	8200	378	85	Divide N•m req'd by 2.4	Divide lbf•in req'd by 96	5.3	8		
	38.1 31.8x 38.1	1-1/2, 1-1/4x 1-1/2														
	(44.4, 50.8), 39.7 x44.5	(1-3/4, 2), 1-9/16 x1-3/4														
B (12,000 in.lbs)	19.1	3/4	1061	40, 60, 68	610	24	239	2120	66	15	Divide N•m req'd by 3.6	Divide lbf•in req'd by 144	6.7	10		
	(22.2, 25.4)	7/8,1					468	4140	130	29						
	31.8	1-1/4	1061				1109	9815	308	68						
	38.1, (44.4, 50.8)	1-1/2, (1-3/4, 2)					1356	12,000	377	83						
C (18,000 in.lbs)	31.8	1-1/4	1061	40, 60, 68	610	24	1109	9815	231	51	Divide N•m req'd by 4.8	Divide lbf•in req'd by 194	9	13.5		
	(44.4, 50.8)	(1-3/4, 2)					2034	18,000	424	93						
D (30,000 in.lbs)	(44.4, 50.8)	(1-3/4, 2)	1061	80, 100	762	30	2658	23,524	369	82	Divide N•m req'd by 7.2	Divide lbf•in req'd by 287	10.7	16		
	54, 63.5 57.2x 63.5	2-1/8, 2-1/2, 2-1/4x 2-1/2					914	36	3390	30,000					394	87
	76x 63.5, 101.6x 63.5	3x2 1/2,4x 2 1/2	1061													
II-FA ⁽²⁾ (60,000 in.lbs)	76x 63.5, 101.6x 63.5	3x2 1/2,4x 2 1/2	1061	80, 100	406	16	6301	55,762	400	90	Divide N•m req'd by 15.7	Divide lbf•in req'd by 619	48	72		

1. Compare table value with torque requirements of the valve (from Fisher Catalog 14). Note that dynamic torque of the valve may have a positive or negative effect on total torque required.
 2. Has spur gear.
 3. 2A 3/4 inch shaft will also mount on the 1061 size 40, 60, and 68.
 4. Maximum torque of connection between power and manual actuator.

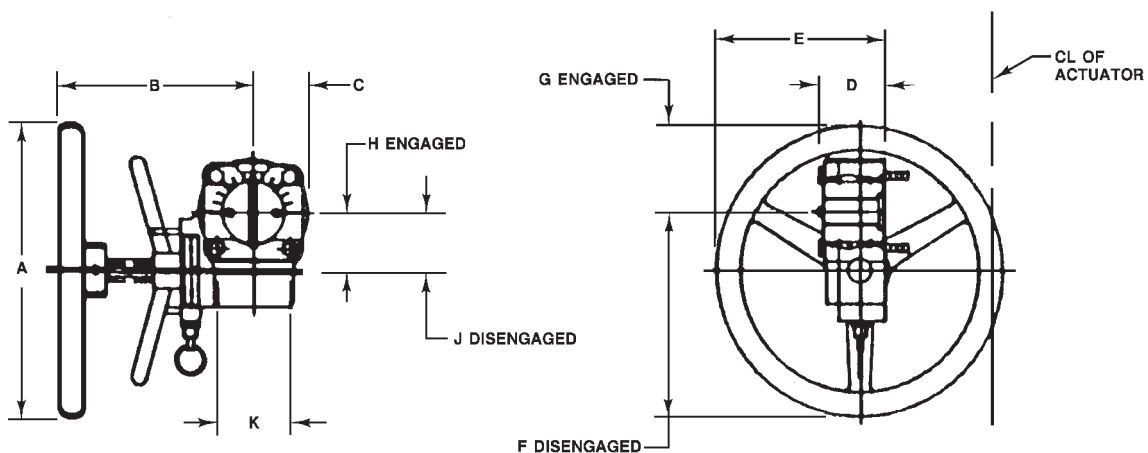
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Table 5. Dimensions for Actuator Sizes AAA, AA, and A

1078 Size	ROTARY ACTUATOR SIZE	A	B	C	D	E	F	G	H	J	Square Bolt Pattern	Circular Bolt Pattern
mm												
AAA	20, 33	305	184	40	67	178	204	106	46	51	57.1 SQ	---
AA	27	305	203	56	70	181	216	94	59	64	76.2 SQ	---
A	75	610	381	68	83	337	378	238	67	73	88.9 SQ	---
Inches												
AAA	20, 33	12.00	7.25	1.56	2.62	7.00	8.02	4.18	1.82	2.02	2.25 SQ	---
AA	27	12.00	8.00	2.19	2.75	7.12	8.50	3.69	2.31	2.50	3.00 SQ	---
A	75	24.00	15.00	2.69	3.25	13.25	14.88	9.38	2.63	2.88	3.50 SQ	---



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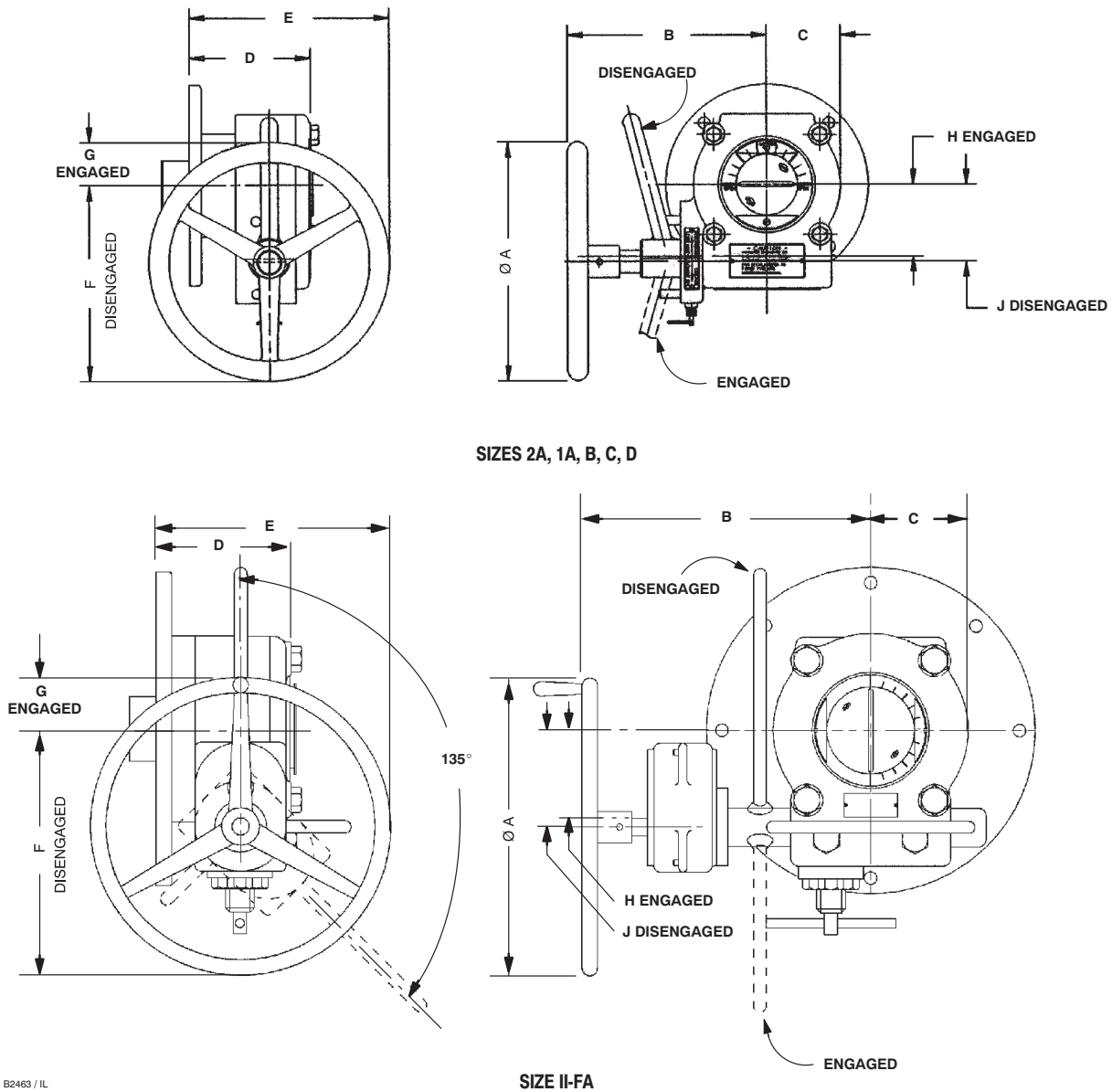
NOTE: THIS DRAWING IS A TYPICAL VIEW ONLY. FOR SOME VALVES, HANDWHEEL IS ON THE OPPOSITE SIDE.

Figure 4. Dimensions for Actuator Sizes AAA, AA, and A (also see table 5)

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Table 6. Dimensions for Actuator Sizes 2A, 1A, B, C, D, and II-FA

1078 Size	A	B	C	D	E	F	G	H	J
mm									
2A	152	230	55.4	116	155	140	17.5	58.7	63.5
	203				181				
	305				232				
1A	305	229	68.3	124	235	229	82.6	69.9	76.2
	610				387				
B	203	229	84.1	140	194	191	19.1	82.6	88.9
	305				244				
	610				397				
C	610	254	102	149	400	416	200	105	111
D	762	254	117	203	505	506	262	119	125
	914				581				
II-FA	406	356	117	203	337	328	84	119	125
Inches									
2A	6.00	8.00	2.18	4.56	6.12	5.5	0.69	2.31	2.50
	8.00				7.12				
	12.00				9.12				
1A	12.00	9.00	2.69	4.88	9.25	9.00	3.25	2.75	3.00
	24.00				15.25				
B	8.00	9.00	3.31	5.50	7.62	7.50	0.75	3.25	3.50
	12.00				9.62				
	24.00				15.62				
C	24.00	10.00	4.00	5.88	15.75	16.38	7.88	4.12	4.38
D	30.00	10.00	4.62	8.00	20.25	19.94	10.31	4.69	4.94
	36.00				23.25				
II-FA	16.00	14.00	4.62	8.00	13.25	12.94	3.31	4.69	4.94



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Figure 5. Dimensions for Actuator Sizes 2A, 1A, B, C, D, and II-FA (also see table 6)

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Ordering Information

Whenever a power actuator is ordered with a 1078 manual actuator, all components are configured and mounted according to specifications of the order.

Size AAA, AA, and A

Field installation of the 1078 onto existing actuators with F or G mounting adaptations requires installation of new power actuator parts. (The F and G mounting adaptations are the mounting methods normally used to mount 1051, 1052, 1066 and 1066SR actuators on Fisher valves.) For the 1051 or 1052 size 33, a lever with stub shaft must be installed. For the 1066 or 1066SR actuator, a hub assembly with stub shaft must be installed. Field installation on power actuators with H mounting adaptations requires dual stub shaft construction (standard on the 1066 or 1066SR actuator). (The H mounting adaptation is the mounting method normally used to mount 1051, 1052, 1066 and 1066SR actuators on equipment and valves other than Fisher valves.) Installation of a valve to bypass cylinder or diaphragm pressure during manual operation is also recommended.

Size 2A, 1A, B, C, D, and II-FA

Field installation of the 1078 onto the following existing actuators with F or G mounting adaptations [1051 (sizes 40 and 60), 1052 (sizes 40, 60, and 70), and 1061 (sizes 30, 40, 60, 68, 80, and 100)] requires additional parts in most cases. Remove the cover and hub and then replace with the 1078 actuator. Most assemblies require a new lever and splined adaptor.

Table 7. Handwheel/Valve Shaft Rotation

VALVE	1078 ACTUATOR ACTION		
	Actuator Mounting		
	Right-Hand	Left-Hand	Left-Hand (Optional) ⁽³⁾
8510, 8522, 8532, 8560, and 9500	Direct Acting ⁽¹⁾	Direct Acting	NA
V150, V200, and V300	Reverse Acting ⁽²⁾	Reverse Acting	Direct Acting
V250	Reverse Acting	Direct Acting	NA
V500 and CV500	Reverse Acting	Reverse Acting	NA

1. Direct acting is when the clockwise handwheel rotation produces clockwise valve shaft rotation to close the valve.
 2. Reverse acting is when the clockwise handwheel rotation produces counter clockwise valve shaft rotation to close the valve.
 3. A left hand ball will be required for the NPS 3 through 12 series B and the NPS 14 through 20, with or without an attenuator.

When ordering, specify:

1. Power actuator type and size, and valve shaft size.
2. Right or left hand mounting and desired mounting position.
3. Direct or reverse acting manual actuator construction. Refer to the mounting positions shown in the appropriate actuator bulletin and order according to the guidelines in table 7.

Note

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