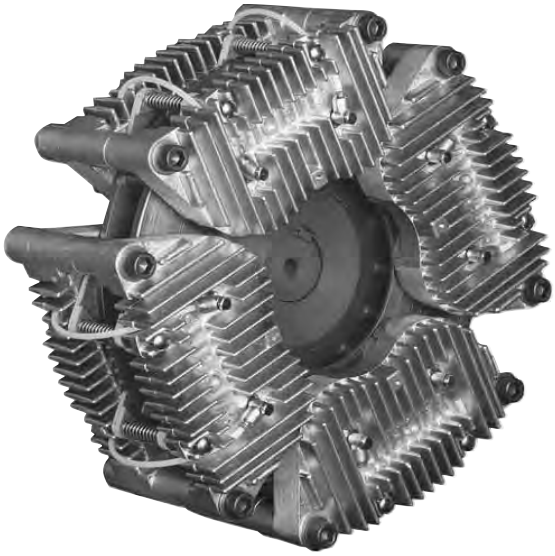
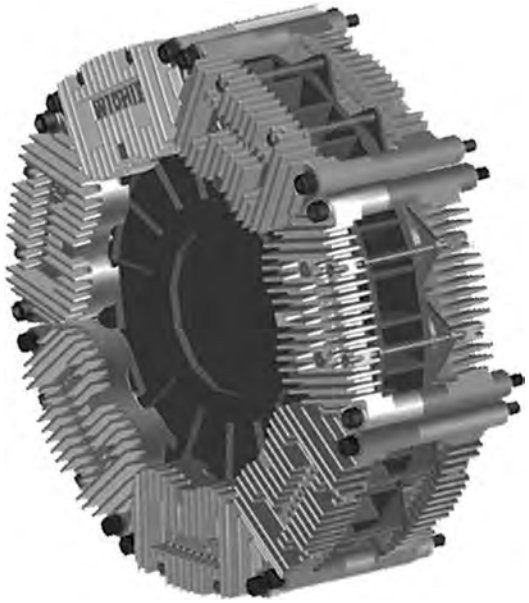
Tension Brakes/Air Cooled

ModEvo Tension Brakes





Brake Discs and Cooling

The ModEvo brake disc was developed at the Bedford, UK factory using Finite Element Analysis techniques to ensure maximum strength with minimum weight. The design is optimized to make best use of the cooling air available at slow speeds, and being bidirectional, it achieves high heat dissipation capacity in either rotational direction, unlike some other brakes. An optional electric cooling fan is available where space is limited or more extreme heat handling is required.

Available in five sizes: 250 mm, 300 mm, 350 mm, 400 mm and 450 mm diameters, all discs are the same thickness and use the same brake modules and actuators. Each disc can be specified with a minimum of a single module, up to the maximum number of modules that can be fitted around the disc. This allows torque-handling capabilities ranging from a maximum of 659 lb.ft. for the 250 mm disc, up to 3181 lb.ft. for the 450 mm disc.

NOTE: If using a high speed ductile iron disc the catalog heat rating should be reduced by 10% as the thermal conductivity of the ductile iron is less than grey cast iron.

Maximum Rotational Speed		
Disc Diameter mm	Standard Speed rev./min.	High Speed rev./min.
250	2,250	3,375
300	1,900	2,850
350	1,650	2,475
400	1,450	2,175
450	1,250	1,875

Actuator Options

Newly developed rolling diaphragm actuators are used in ModEvo, producing more force than previous designs to allow higher torque ratings. However, the sensitivity for which rolling diaphragms are favored is not compromised. Three actuator options are available, offering clamping forces of 100%, 60% or 25%.

The finned, die cast aluminum brake module is common to all brake disc diameters. Each module houses two pairs of actuators, and allows friction pads to be changed quickly without dismantling the module.

100%

60%

25%

ModEvo 300/8 with Fan

Brake Size (fan Diameter)	24v DC	115v AC	230v AC
250 (150 mm)	Yes	Yes	Yes
300 (150 mm)	Yes	Yes	Yes
350 (150 mm)	Yes	Yes	Yes
400 (150 mm)	Yes	Yes	Yes
(200 mm)	not available	Yes	Yes
450 (150 mm)	Yes	Yes	Yes
(200 mm)	not available	Yes	Yes
(250 mm)	not available	Yes	Yes

Optional Guard

The optional guard has a plastic front with 'ModEvo' molded in and a metal ventilated perimeter.

Mounting is by four brackets on customer's machine frame.

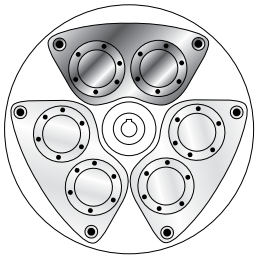
The center of the guard is designed such that it may be cut-out by customer to suit the diameter of the shaft in through-shaft installations.

C

Tension Brakes/Air Cooled

ModEvo Tension Brakes

ModEvo Model 250



Model	Minimum Torques		
	Minimum (3 PSI) (0.2 Bars) lb.ft.Nm		
	25% Actuators	60% Actuators	100% Actuators
250/1	1 1	2 2	3 4
250/2*	1 2	4 5	6 8
250/4*	3 4	7 10	12 16
250/6*	4 6	11 14	18 24
	Maximum Torques Maximum (87 PSI) (6 Bars) lb.ft.Nm		
250/1	22 30	53 71	88 119
250/2*	44 60	110 143	176 238
250/4*	88 72	211 286	352 477
250/6*	132 179	317 429	528 715

* For single actuator operation torques for 250/1 are applicable.

Model[2]	Speed[1] Max.	Heat Capacity for Effective Cooling Speeds							Inertia Rotating Parts	Weight	
		Continuous Duty** HP(kW)							lb.ft.^{2} (kbm^2)	lbs.(kg)	
	RPM	50 RPM	100 RPM	200 RPM	300 RPM	400 RPM	500 RPM	600 RPM		Total	Rotating
250/1	2250	**WIthout Fan**							1.424 (0.060)	27.337 (12.4)	19.180 (8.7)
250/2	2250	1.34 (1.0)	1.61 (1.2)	2.14 (1.6)	2.68 (2.0)	3.08 (2.3)	3.49 (2.6)	3.62 (2.7)		29.101 (13.2)	
250/4	2250	**WIth Electric Cooling Fan, 150 mm dia.**								38.801 (17.6)	
250/6	2250	4.56 (3.4)	4.69 (3.5)	5.09 (3.8)	5.36 (4.0)	5.36 (4.0)	5.36 (4.0)	5.36 (4.0)		48.772 (22.1)	

** For intermittent duty, consult the factory.

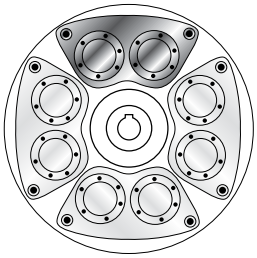
1 Max. speed is with standard brake disc. A high speed brake disc capable of 50% higher speed is also available. Heat Capacity reduced by 10% when high speed disc is used.

2 When selecting number of actuators, use a limit of 3.35 HP per actuator pair (2.5 kW per Actuator pair) for duty w/o fan and 3.75 HP per Actuator pair (2.8 kW per Actuator pair) when fan cooled.

Note: Limit maximum operating temperatures of surfaces (rotor, friction pads, actuators, etc.) to 300°F or less. Temperatures above 300°F may cause damage and failure of components. Failure to do so will void warranty.

ModEvo Tension Brakes

ModEvo Model 300



Model	Minimum Torques		
	Minimum (3 PSI) (0.2 Bars) lb.ft.Nm		
	25% Actuators	60% Actuators	100% Actuators
300/1	1 1	2 3	4 5
300/2*	2 3	4 6	7 10
300/4*	4 5	9 12	15 20
300/6*	6 8	13 18	22 30
300/8*	7 10	18 24	30 40
	Maximum Torques Minimum (87 PSI) (6 Bars) lb.ft.Nm		
300/1	27 37	66 89	110 149
300/2*	55 75	132 179	220 298
300/4*	110 149	263 357	439 595
300/6*	165 223	395 536	659 893
300/8*	220 298	527 715	879 1191

* For single actuator operation torques for 300/1 are applicable.

Model[2]	Speed[1] Max.	Heat Capacity for Effective Cooling Speeds							Inertia Rotating Parts	Weight	
		Continuous Duty** HP(kW)							lb.ft.^{2} (kbm^2)	lbs.(kg)	
	RPM	50 RPM	100 RPM	200 RPM	300 RPM	400 RPM	500 RPM	600 RPM		Total	Rotating
300/1	1900	**WIthout Fan**							2.966 (0.125)	38.140 (17.3)	29.883 (13.6)
300/2	1900	2.41 (1.8)	2.68 (2.0)	3.35 (2.5)	4.02 (3.0)	4.56 (3.4)	5.09 (3.8)	5.63 (4.2)		39.904 (18.1)	
300/4	1900	**WIth Electric Cooling Fan, 150 mm dia.**								49.604 (22.5)	
300/6	1900	6.30 (4.7)	6.70 (5.0)	6.70 (5.0)	6.70 (5.0)	7.37 (5.5)	8.04 (6.0)	8.04 (6.0)		59.525 (27.0)	
300/6	1900									69.446 (31.5)	

** For intermittent duty, consult the factory.

1 Max. speed is with standard brake disc. A high speed brake disc capable of 50% higher speed is also available. Heat Capacity reduced by 10% when high speed disc is used.

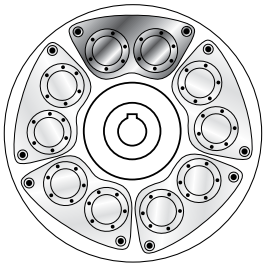
2 When selecting number of actuators, use a limit of 3.35 HP per actuator pair (2.5 kW per Actuator pair) for duty w/o fan and 3.75 HP per Actuator pair (2.8 kW per Actuator pair) when fan cooled.

Note: Limit maximum operating temperatures of surfaces (rotor, friction pads, actuators, etc.) to 300°F or less. Temperatures above 300°F may cause damage and failure of components. Failure to do so will void warranty.

Tension Brakes/Air Cooled

ModEvo Tension Brakes

ModEvo Model 350



Model	Minimum Torques		
	Minimum (3 PSI) (0.2 Bars) lb.ft.Nm		
	25% Actuators	60% Actuators	100% Actuators
350/1	1 2	3 4	4 6
350/2*	7 3	18 7	30 12
350/4*	1 6	3 14	9 24
350/6*	7 9	16 22	27 36
350/8*	9 12	21 29	35 48
350/10*	11 15	27 36	44 60
	Maximum Torques Minimum (87 PSI) (6 Bars) lb.ft.Nm		
350/1	33 45	80 108	133 181
350/2*	67 90	160 217	266 361
350/4*	133 181	320 434	534 723
350/6*	200 271	480 650	800 1084
350/8*	267 361	640 867	1066 1445
350/10*	333 452	800 1084	1334 1807

* For single actuator operation torques for 350/1 are applicable.

Model[2]	Speed[1] Max.	Heat Capacity for Effective Cooling Speeds							Inertia Rotating Parts	Weight	
		Continuous Duty** HP(kW)							lb.ft.^{2} (kbm^2)	lbs.(kg)	
	RPM	50 RPM	100 RPM	200 RPM	300 RPM	400 RPM	500 RPM	600 RPM		Total	Rotating
350/2	1650	**Without Fan**							5.458 (0.230)	57.982 (24.8)	46.958 (20.3)
350/4	1650	3.22 (2.4)	3.49 (2.6)	4.69 (3.5)	5.36 (4.0)	6.17 (4.6)	7.37 (5.5)	8.04 (6.0)		69.005 (29.2)	
350/6	1650	**With Electric Cooling Fan, 150 mm dia.**								80.248 (33.7)	
350/8	1650	7.77 (5.8)	8.45 (6.3)	8.71 (6.5)	8.71 (6.5)	8.71 (6.5)	8.71 (6.5)	8.71 (6.5)		91.271 (38.2)	
350/10	1650									102.294 (42.7)	

** For intermittent duty, consult the factory.

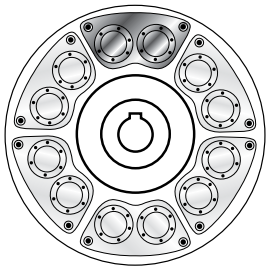
1 Max. speed is with standard brake disc. A high speed brake disc capable of 50% higher speed is also available. Heat Capacity reduced by 10% when high speed disc is used.

2 When selecting number of actuators, use a limit of 3.35 HP per actuator pair (2.5 kW per Actuator pair) for duty w/o fan and 3.75 HP per Actuator pair (2.8 kW per Actuator pair) when fan cooled.

Note: Limit maximum operating temperatures of surfaces (rotor, friction pads, actuators, etc.) to 300°F or less. Temperatures above 300°F may cause damage and failure of components. Failure to do so will void warranty.

ModEvo Tension Brakes

ModEvo Model 400



Model	Minimum Torques		
	Minimum (3 PSI) (0.2 Bars) lb.ft.Nm		
	25% Actuators	60% Actuators	100% Actuators
400/1	1 2	3 4	5 7
400/2*	3 4	6 8	10 14
400/4*	5 7	12 17	21 28
400/6*	8 11	19 26	32 43
400/8*	11 14	25 34	42 57
400/10*	13 18	31 43	52 71
400/12*	16 21	38 51	63 85
	Maximum Torques Minimum (87 PSI) (6 Bars) lb.ft.Nm		
400/1	39 53	94 128	157 213
400/2	79 107	189 256	314 426
400/4	157 213	377 511	629 852
400/6	236 320	566 767	943 1278
400/8	314 426	755 1022	1258 1704
400/10	393 533	943 1278	1572 2130
400/12	472 639	1132 1534	1886 2556

* For single actuator operation torques for 400/1 are applicable.

Model[2]	Speed[1] Max.	Heat Capacity for Effective Cooling Speeds							Inertia Rotating Parts	Weight	
		Continuous Duty** HP(kW)							lb.ft.^{2} (kbm^2)	lbs.(kg)	
	RPM	50 RPM	100 RPM	200 RPM	300 RPM	400 RPM	500 RPM	600 RPM		Total	Rotating
400/2	1450									69.005 (31.3)	
400/4	1450				**WIthout Fan**					78.705 (35.7)	
400/6	1450	3.62 (2.7)	4.29 (3.2)	6.03 (4.5)	6.70 (5.0)	7.64 (5.7)	8.71 (6.5)	9.38 (7.0)	9.492 (0.400)	88.626 (40.2)	61.509 (26.8)
400/8	1450				**WIth Electric Cooling Fan, 150 mm dia.**					98.547 (44.7)	
400/10	1450	8.18 (6.1)	8.98 (6.7)	9.38 (7.0)	10.05 (7.5)	10.72 (8.0)	10.72 (8.0)	10.72 (8.0)		108.467 (49.2)	
400/12	1450									118.168 (53.6)	

**For intermittent duty and thermal ratings using 200 mm fan, consult the factory.

1 Max. speed is with standard brake disc. A high speed brake disc capable of 50% higher speed is also available. Heat Capacity reduced by 10% when high speed disc is used.

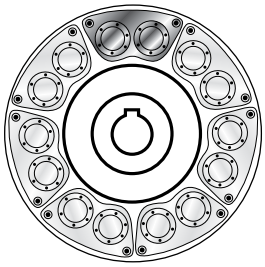
2 When selecting number of actuators, use a limit of 3.35 HP per actuator pair (2.5 kW per Actuator pair) for duty w/o fan and 3.75 HP per Actuator pair (2.8 kW per Actuator pair) when fan cooled.

Note: Limit maximum operating temperatures of surfaces (rotor, friction pads, actuators, etc.) to 300°F or less. Temperatures above 300°F may cause damage and failure of components. Failure to do so will void warranty.

Tension Brakes/Air Cooled

ModEvo Tension Brakes

ModEvo Model 450



Model	Minimum Torques		
	Minimum (3 PSI) (0.2 Bars) lb.ft.Nm		
	25% Actuators	60% Actuators	100% Actuators
450/1	1 2	4 5	6 8
450/2*	3 4	7 10	12 16
450/4*	6 8	15 20	24 33
450/6*	9 12	22 29	36 49
450/8*	12 16	29 39	48 65
450/10*	15 21	36 49	61 82
450/12*	18 25	43 59	72 98
450/14*	21 29	51 69	85 115
	Maximum Torques Minimum (87 PSI) (6 Bars) lb.ft.Nm		
450/1	45 61	108 147	181 246
450/2*	91 123	217 295	362 491
450/4*	181 246	435 589	725 982
450/6*	272 368	652 883	1086 1472
450/8*	362 491	869 1178	1449 1963
450/10*	453 614	1087 1472	1811 2454
450/12*	543 736	1304 1767	2173 2945
450/14*	634 859	1521 2061	2535 3435

* For single actuator operation torques for 450/1 are applicable.

Model[2]	Speed[1] Max.	Heat Capacity for Effective Cooling Speeds							Inertia Rotating Parts	Weight	
		Continuous Duty** HP(kW)							lb.ft.[2] (kbm[2])	lbs.(kg)	
	RPM	50 RPM	100 RPM	200 RPM	300 RPM	400 RPM	500 RPM	600 RPM		Total	Rotating
450/2	1250									82.673 (37.5)	
450/4	1250									92.374 (41.9)	
450/6	1250	3.89 (2.9)	4.83 (3.6)	6.84 (5.1)	7.91 (5.9)	8.71 (6.5)	10.32 (7.7)	11.13 (8.3)	14.475 (0.610)	102.294 (46.4)	72.752 (33.0)
450/8	1250									112.215 (50.9)	
450/10	1250	8.85	9.12	9.38	9.65	10.72	11.66	12.47		122.136 (55.4)	
450/12	1250	(6.6)	(6.8)	(7.0)	(7.2)	(8.0)	(8.7)	(9.3)		131.836 (59.8)	
450/14	1250									141.757 (64.3)	

Without Fan

With Electric Cooling Fan, 150 mm dia.

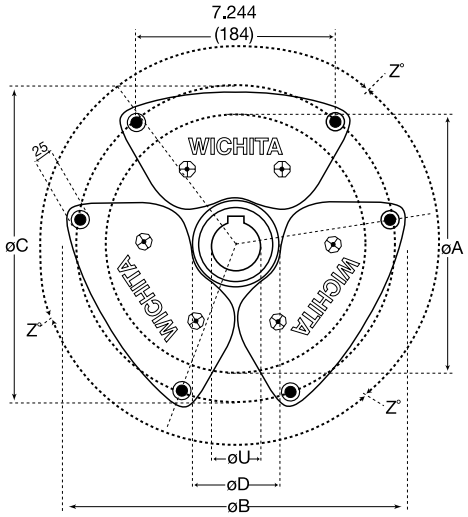
**For intermittent duty and thermal ratings using 200 mm or 250 mm fan, consult the factory.

4 Max. speed is with standard brake disc. A high speed brake disc capable of 50% higher speed is also available. Heat Capacity reduced by 10% when high speed disc is used.

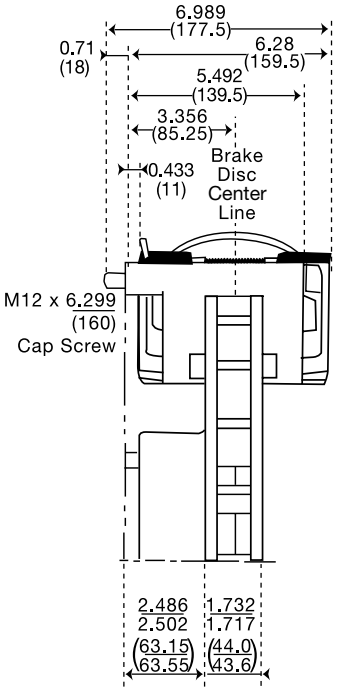
6 When selecting number of actuators, use a limit of 3.35 HP per actuator pair (2.5 kW per Actuator pair) for duty w/o fan and 3.75 HP per Actuator pair (2.8 kW per Actuator pair) when fan cooled.

Note: Limit maximum operating temperatures of surfaces (rotor, friction pads, actuators, etc.) to 300°F or less. Temperatures above 300°F may cause damage and failure of components. Failure to do so will void warranty.

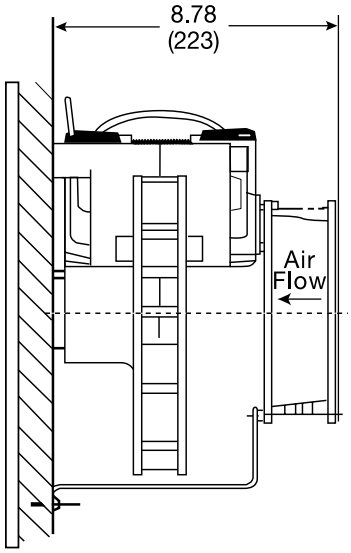
ModEvo Tension Brakes



Front View



Side View



Side View With Fan

C

Dimensions: inches (mm)

Size	250	300	350	400	450
ØA - Disc Size	9.843 (250)	11.811 (300)	13.78 (350)	15.748 (400)	17.717 (450)
ØB - Overall	12.756 (324)	14.528 (369)	16.339 (415)	18.149 (461)	20.000 (508)
ØC - Bolt P.C.D	11.752 (298.5)	13.524 (343.5)	15.315 (389)	17.146 (435.5)	18.996 (482.5)
ØD - Clearance Diameter	3.543 (90)	5.512 (140)	7.480 (190)	9.449 (240)	11.417 (290)
U - As Cast Bore	0.984 (25)	0.984 (25)	0.984 (25)	0.984 (25)	0.984 (25)
Maximum Bore	2.165 (55)	3.110 (79)	4.606 (117)	5.354 (136)	6.063 (154)
Z" - Angular Position	120º	90º	72º	60º	51.4º
Maximum Number of Brake Modules	3	4	5	6	7
Wichita Generic Drawing Number	73125-000	73130-000	73141-000	73141-000	73145-000
Hose Length/Module 15667-020 W4 6977	39.37 (1,000)	47.25 (1,200)	55.12 (1,400)	63.00 (1,600)	70.87 (1,800)