



ITT Enidine Rate Controls are designed to regulate the speed and time required for a mechanism to move from one position to another. Adjustable and non-adjustable models are available to accommodate a wide variety of motion control applications. Both single and double acting hydraulic damper designs allow smooth, controllable machine operation by providing rate control for both linear and rotational (hinged) loads. Each product family offers a variety of stroke lengths from which to choose.

Adjustable, Double Acting (ADA 500 and ADA 700 Series) rate controls regulate speed in both tension and/or compression modes independently. ADA products let the user adjust the rate to suit specific application requirements. Fixed orifice interchangeable cartridges are available for the ADA 500 Series, which provide tamperproof operation once the desired rate has been determined. An optional remote adjustment cable provides adjustment control in otherwise inaccessible locations for the ADA 500 Series.

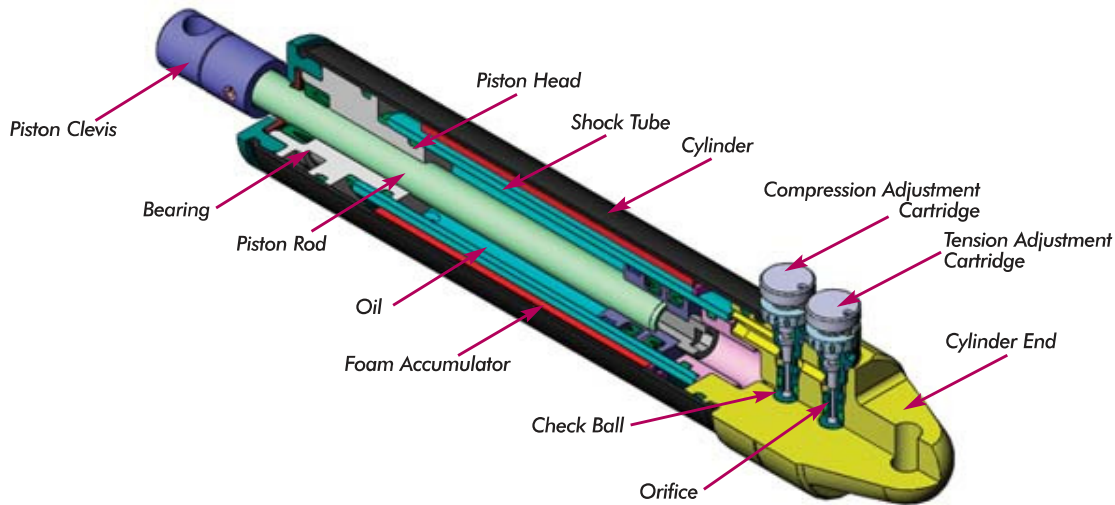
The **DA Series** are non-adjustable, custom-orificed at factory, double acting rate controls which provide smooth, reliable motion control for high load capacities. Tow Bar (TB) snubbers are specially designed DA's which dampen the abrupt starts and stops of power and free conveying systems.

Features and Benefits

- Extensive product line offers flexibility in both size and load capacities to fulfill a wide range of application requirements.
- ISO quality standards result in reliable, long-life operation.
- A select variety of surface finishes maintains original quality appearance and provides the longest corrosion resistance protection.
- Custom stroke lengths and damping characteristics can be designed to suit your application requirements.
- Incorporating optional fluids can expand the standard operational temperature range from (15°F to 180°F) to (-30°F to 210°F).
- Special materials and finishes available to meet specific customer requirements.

Adjustable Double Acting (ADA) Series Rate Control

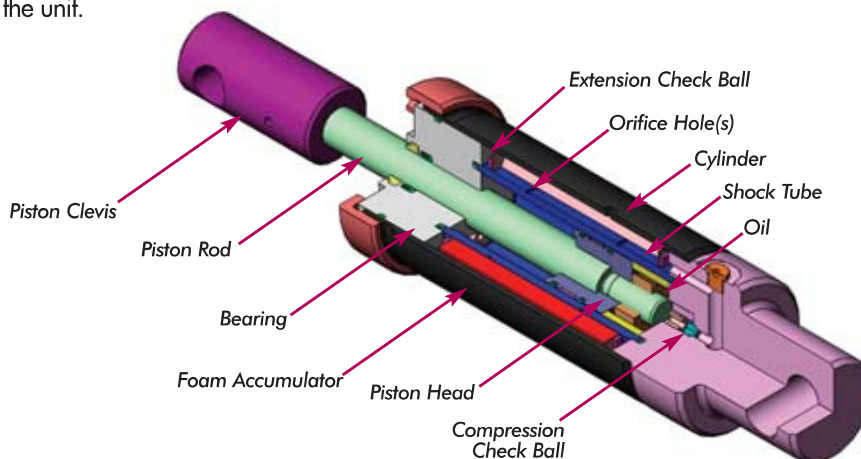
Overview



ITT Enidine Double Acting Adjustable (ADA) rate controls control the velocity of both linear and rotational loads throughout their entire motion. Adjustment cartridges on the ADA 500 Series allow flexibility in controlling the speed for an applied force in both the tension and compression directions. Maximum damping is achieved by turning the adjustment knob to the number eight (8) setting, while turning the knob to the zero (0) setting provides minimal resistance. Interchangeable, threaded, fixed-orifice cartridges can provide consistent, tamper-resistant damping to meet particular application requirements.

The ADA 500 Series utilizes two independent adjustment cartridges for motion control in each direction, housed in the cylinder end. The ADA 700 Series has independently controlled tension and compression capabilities located at each end of the unit.

Resistance is controlled by using a wrench key at either end of the rate control and adjusting the movement by following the stiffer (+) or softer (-) indications. When the rate control is compressed, the oil is orificed through the compression adjustment cartridge and flows freely through the tension adjustment cartridge. The tension cartridge check ball unseats and allows free flow of the oil to the rod end of the shock tube. A foam accumulator is utilized to accept the volume of oil displaced by the piston rod. When the rate control is extended, oil is moved through an internal flow path in the shock tube and is orificed through the tension adjustment cartridge. The compression cartridge check ball unseats and allows free flow of the oil into the blind end of the shock tube.



DA Series rate controls are ideally suited for high-energy, heavy load applications requiring rate control in tension, compression or both directions. These non-adjustable, custom-orificed units are designed to specific input conditions, and allow for single and multiple orifice configurations.

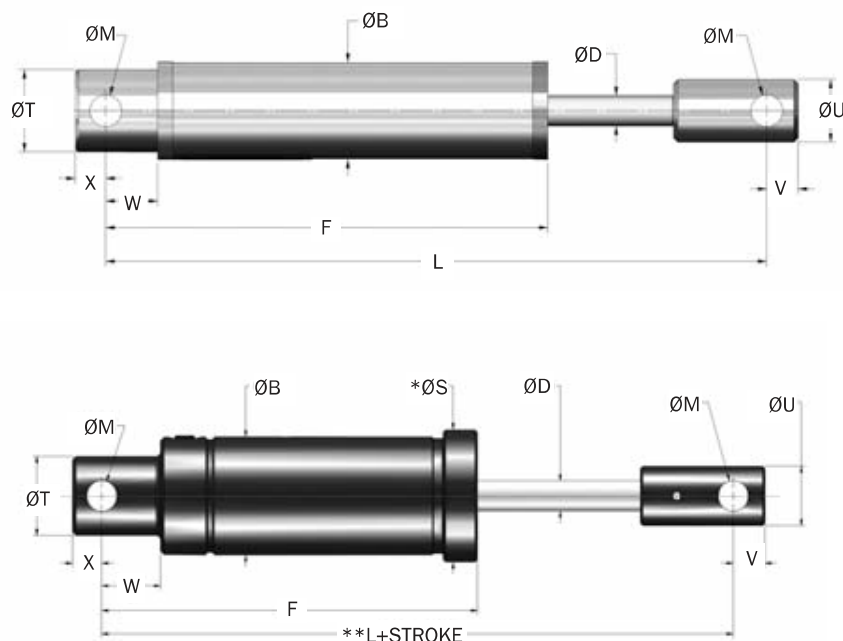
Upon compression of the rate control, the compression check ball seats. As the piston head moves, oil is forced through the orifice hole(s) located in the shock tube, producing the required damping force. After the oil has

passed through the orifice hole(s), a portion of the oil passes through the extension check valve and fills the rod end of the shock tube. The remainder of the oil volume displaced by the piston rod compresses the foam accumulator.

Upon extension of the rate control, the extension check ball seats. As the piston head moves, oil is forced through the orifice hole(s) located in the shock tube producing the required damping force. The compression check ball is unseated by the flow of oil which fills the blind end of the shock tube.

DA 705 → DA720 Series

DA 75M x 50 → DA 75M x 100 Series



Catalog No./ Model	Damping Direction	Bore Size in. (mm)	(S) Stroke in. (mm)	(F _p) Max. Propelling Force lbs. (N)	(E _T) Max. in.-lbs./cycle (Nm/cycle)	(E _T -C) Max. in.-lbs./hr (Nm/cycle)	Model Weight lbs. (Kg)
DA 705	T, C or T and C	.98 (25,0)	2 (50,0)	2,500 (11 000)	—	1,100,000 (129 000)	3.5 (1,6)
DA 710	T, C or T and C	.98 (25,0)	4 (100,0)	2,500 (11 000)	—	1,400,000 (168 000)	4.4 (2,0)
DA 715	T, C or T and C	.98 (25,0)	2 (50,0)	2,500 (11 000)	—	1,800,000 (206 000)	5.1 (2,3)
DA 720	T, C or T and C	.98 (25,0)	4 (100,0)	2,500 (11 000)	—	2,100,000 (247 000)	5.7 (2,6)
DA 75 x 2	T, C or T and C	1.50	2	5,000	10,000	2,700,000	25.0
DA 75M x 50	T, C or T and C	(38,0)	(50,0)	(22 250)	(1 120)	(305 000)	(11,4)
DA 75 x 4	T, C or T and C	1.50	4	5,000	20,000	3,100,000	29.0
DA 75M x 100	T, C or T and C	(38,0)	(100,0)	(22 250)	(2 240)	(350 000)	(13,2)

Catalog No./ Model	B in. (mm)	D in. (mm)	F in. (mm)	L in. (mm)	M ±.015 (±0,38) in. (mm)	S in. (mm)	T ±.015 (±0,38) in. (mm)	U ±.010 (±0,25) in. (mm)	V in. (mm)	W in. (mm)	X in. (mm)	(S) Stroke in. (mm)
DA 705	1.77 (45,0)	.55 (14,0)	8.04 (255,1)	12.09 (307,1)	.579 (14,7)	—	1.50 (38,0)	1.14 (29,0)	.571 (14,5)	.945 (24,0)	.551 (14,0)	2 (50,0)
DA 710	1.77 (45,0)	.55 (14,0)	10.04 (255,1)	16.11 (409,1)	.579 (14,7)	—	1.50 (38,0)	1.14 (29,0)	.571 (14,5)	.945 (24,0)	.551 (14,0)	4 (100,0)
DA 715	1.77 (45,0)	.55 (14,0)	12.05 (306,1)	20.12 (511,1)	.579 (14,7)	—	1.50 (38,0)	1.14 (29,0)	.571 (14,5)	.945 (24,0)	.551 (14,0)	6 (150,0)
DA 720	1.77 (45,0)	.55 (14,0)	14.02 (356,1)	24.06 (611,1)	.579 (14,7)	—	1.50 (38,0)	1.14 (29,0)	.571 (14,5)	.945 (24,0)	.551 (14,0)	8 (200,0)
DA 75 x 2	3.00	0.75	9.58	13.75	.765	3.38	2.00	1.500	.81	1.50	.75	2
DA 75M x 50	(76,0)	(19,0)	(245)	(348)	(19,4)	(86,0)	(51,0)	(38,0)	(21,0)	(38,0)	(19,0)	(50,0)
DA 75 x 4	3.00	0.75	11.58	15.75	.765	3.38	2.00	1.500	.81	1.50	.75	4
DA 75M x 100	(76,0)	(19,0)	(295)	(398)	(19,4)	(86,0)	(51,0)	(38,0)	(21,0)	(38,0)	(19,0)	(100,0)

Notes: 1. DA Models will function at 10% of their maximum rated energy per cycle. If less than 10%, a smaller model should be specified.

2. Provide a positive stop 12 in. before end of stroke in tension and compression to prevent internal bottoming.

3. For optimal performance in vertical applications using compression, mount the rate control with the piston rod down.

4. * ØS indicates outside diameter of optional protective sleeve for TB models.

5. ** Dimension L is controlled by a 2.0 in. stroke limiter.

Rate Controls

DA Series

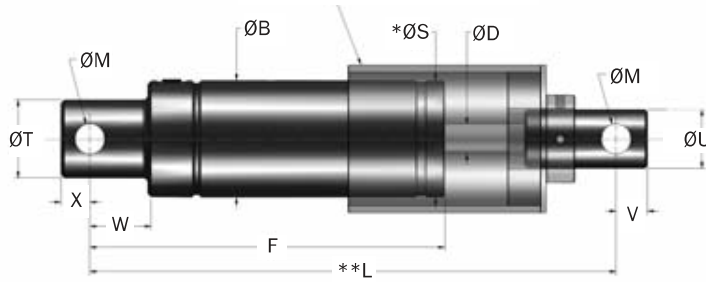
DA

Technical Data

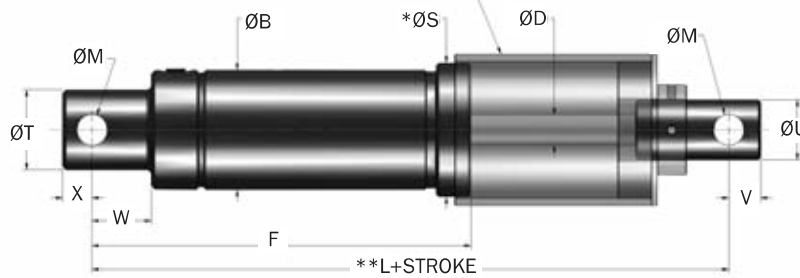
DA 75 x 6 → TB 100 x 6 Series

DA 75M x 150 → DA 75M x 250 Series

OPTIONAL PROTECTIVE SLEEVE,
TOW BAR (TB) MODELS ONLY



OPTIONAL PROTECTIVE SLEEVE,
TOW BAR (TB) MODELS ONLY



Catalog No./ Model	Damping Direction	Bore Size in. (mm)	(S) Stroke in. (mm)	(F _D) Max. Propelling Force lbs. (N)	(E _T) Max. in.-lbs./cycle (Nm/cycle)	(E _T C) Max. in.-lbs./hr (Nm/cycle)	Model Weight lbs. (Kg)
DA 75 x 6	T, C or T and C	1.50	6	5,000	30,000	3,600,000	33.0
DA 75M x 100		(38,0)	(150,0)	(22 250)	(3 360)	(406 000)	(15,0)
DA 75 x 8	T, C or T and C	1.50	8	5,000	40,000	4,100,000	37.0
DA 75M x 150		(38,0)	(200,0)	(22 250)	(4 480)	(463 000)	(16,8)
DA 75 x 10	T, C or T and C	1.50	10	5,000	50,000	4,500,000	41.0
DA 75M x 250		(38,0)	(250,0)	(22 250)	(5 600)	(508 000)	(18,6)
TB 100 x 4	T and C	2.25	4	10,000	40,000	4,400,000	32.0
		(57,2)	(100,0)	(44 482)	(4 480)	(497 133)	(14,5)
TB 100 x 6	T and C	2.25	6	10,000	60,000	4,400,000	32.0
		(57,2)	(150,0)	(44 482)	(6 779)	(497 133)	(14,5)

Catalog No./ Model	B in. (mm)	D in. (mm)	F in. (mm)	L in. (mm)	M ±.015 (±0,38) in. (mm)	S in. (mm)	T ±.015 (±0,38) in. (mm)	U ±.010 (±0,25) in. (mm)	V in. (mm)	W in. (mm)	X in. (mm)	(S) Stroke in. (mm)
DA 75 x 6	3.00	0.75	13.58	17.75	.765	3.38	2.00	1.500	.81	1.50	.75	6
DA 75M x 100	(76,0)	(19,0)	(345)	(448)	(19,4)	(86,0)	(51,0)	(38,0)	(21,0)	(38,0)	(19,0)	(150,0)
DA 75 x 8	3.00	0.75	15.58	19.75	.765	3.38	2.00	1.500	.81	1.50	.75	8
DA 75M x 150	(76,0)	(19,0)	(395)	(498)	(19,4)	(86,0)	(51,0)	(38,0)	(21,0)	(38,0)	(19,0)	(200,0)
DA 75 x 10	3.00	0.75	17.58	21.75	.765	3.38	2.00	1.500	.81	1.50	.75	10
DA 75M x 250	(76,0)	(19,0)	(445)	(548)	(19,4)	(86,0)	(51,0)	(38,0)	(21,0)	(38,0)	(19,0)	(250,0)
TB 100 x 4	2.75	1.00	18.88	24.25**	.750	3.25*	2.50	1.500	.75	1.75	.75	4
	(70,0)	(25,4)	(480)	(616)	(19,1)	(82,6)	(63,5)	(38,0)	(19,1)	(38,0)	(19,0)	(100,0)
TB 100 x 6	2.75	1.00	18.88	22.25**	.750	3.25*	2.50	1.500	.75	1.75	.75	6
	(70,0)	(25,4)	(480)	(565)	(19,1)	(82,6)	(63,5)	(38,0)	(19,1)	(38,0)	(19,0)	(150,0)

- Notes: 1. DA Models will function at 10% of their maximum rated energy per cycle. If less than 10%, a smaller model should be specified.
 2. Provide a positive stop 12 in. before end of stroke in tension and compression to prevent internal bottoming.
 3. For optimal performance in vertical applications using compression, mount the rate control with the piston rod down.
 4. * ØS indicates outside diameter of optional protective sleeve for TB models.
 5. ** Dimension L is controlled by a 2.0 in. stroke limiter.

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