

PRODUCT SPECIFICATIONS

The following pages contain engineering data and product specifications for T-Max Tensioners.

TO DOWNLOAD FILES

For CAD drawings of T-Max Tensioners, please click on the part number to begin the download process. You will have the choice of 2D .dwg or 3D .igs and .step file formats.



SELECTION

LIGHT DUTY ROTARY TENSIONERS

[RT0500](#)

[RT1000](#)

[RT1600](#)

MEDIUM & HEAVY DUTY ROTARY TENSIONERS

[RT3000](#) [RT4000](#)

LINEAR TENSIONERS

[CT1100, 2100, 3100](#)

[CT1200, 2200, 3200](#)

[CT1400, 2400, 3400](#)

[LT1000, 2000, 3000](#)

SELECTION CHART

OVERHUNG LOAD INFORMATION

FREQUENTLY ASKED QUESTIONS

How to Select a **T-MAX**™ Tensioner

Selecting a tensioner can be difficult because there is no cut-and-dried method for determining the amount of force a tensioner should develop. The size and type of tensioner (belt or chain) are determined based on knowing the drive parameters and power requirements, speed, torque, cycles, etc. These guidelines are suggestions to assist the designer. If there is any doubt, spring force determination should be made in consultation with the belt or chain manufacturer.

V-belt Drives — Light Duty

The RT0500, RT1000, RT1600-L and RT1600 series are best suited for single groove V-belt drives using 3L, 4L or 5L belts or the industrial A cross-section belt. They also can be used with the J and K section Micro-V belts.

V-belt Drives — Medium Duty

The RT3000 series is best suited for A and B section classical and 3V and 5V narrow wedge belts. It can also be used with the J, K and M section Micro-V belts.

V-belt Drives — Heavy Duty

RT4000 series tensioners are designed for use on drives with two to four B/5V belts, one to two C cross-section belts or multiple groove K and M Micro-V belts.

Chain Drives

Refer to the selection chart on page 19.

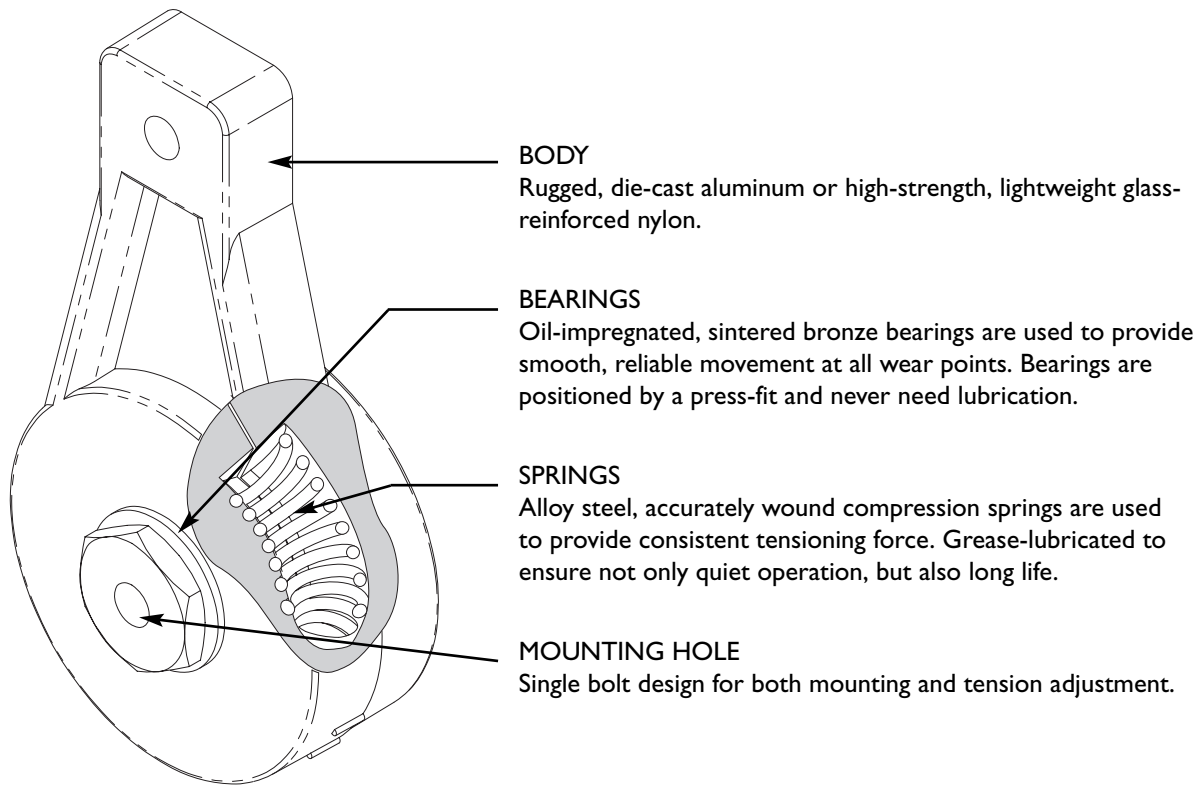
Synchronous Belt Drives

Automatic tensioners are not usually used on power transmitting synchronous belt drives, but are acceptable for use on drives strictly for motion transfer. If an automatic tensioner is desired for a power transmitting drive, consult the belt manufacturer for recommendations.

Idler Guidelines

- Always mount idler on the slack side of the drive, with preferred mounting on the inside of the slack side.
- Follow the belt manufacturer's recommended minimum idler diameter.
- Optimum location for the tensioner is where the idler provides nearly equal arcs of contact on both the driveR and driveN sheaves or sprockets.
- Keep overhung load to a minimum.
- For assistance, contact Fenner Drives' applications engineering group.

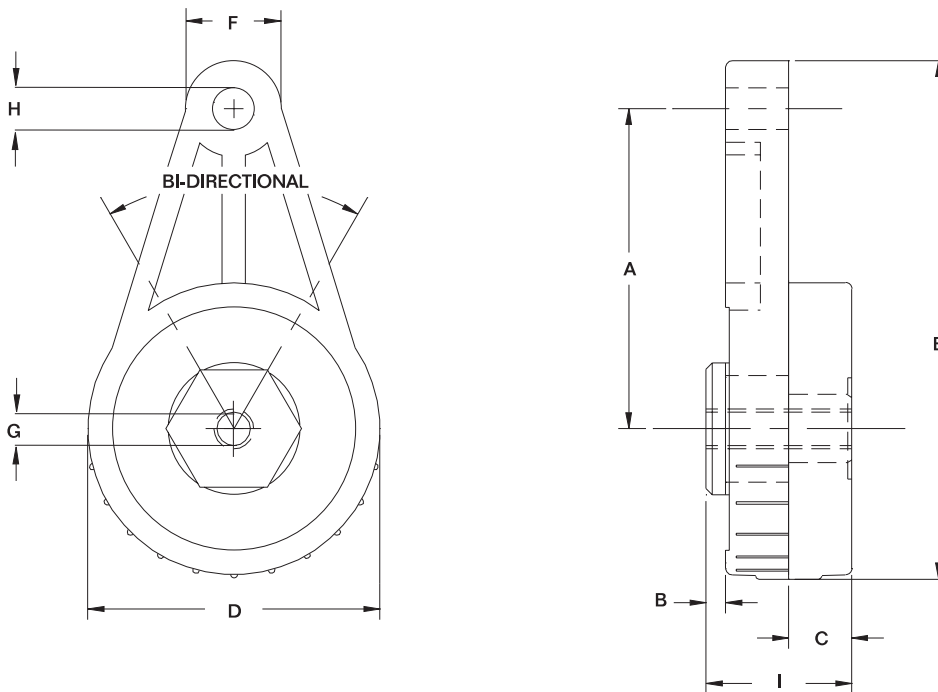




- Rugged, heavy-duty construction
- Easy installation and adjustment with single bolt feature
- Wide variety of sizes and mounting styles
- Improved performance and extended life for most fixed-center drives
- Built-in spring mechanism absorbs momentary overloads and reduces vibration
- Constructed from high-quality materials for proven durability
- Graduated scale tension adjustment
- Not to be used on reciprocating drives
- For harsh environments, contact Applications Engineering
- Ideal for use with PowerMax™ Idler Pulleys and Sprockets

RT0500

- Molded of premium quality, high-strength glass-reinforced nylon
- Composite material means lighter weight
- Spring forces up to 25 lbs.
- Ideally suited for light-duty 3L, 4L, 5L and single A V-belt drives
- Maximum constant operating temperature is 125°F
- Do not use on reciprocating applications such as IC engines and piston devices

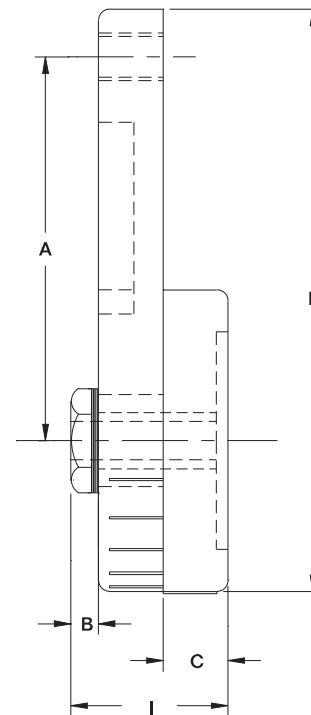
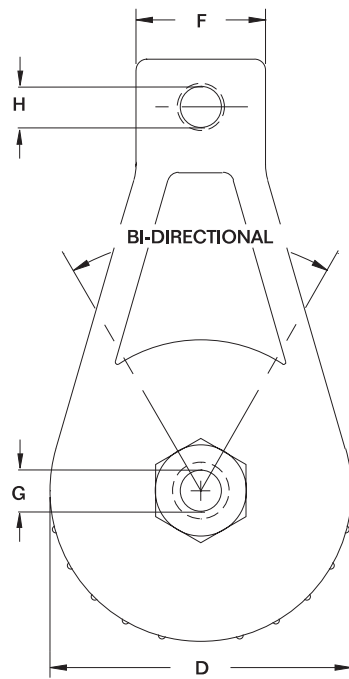


Part No.	A	B	C	D	E	F	G	H	I	Rotation (degrees)	Force ⁽²⁾ (lbs.)
RT0500	3.00	0.19	0.57	2.75	4.86	0.90	3/8-16	0.40	1.36	15	10
										30	15
										45	20
										60	25
RT0501	3.00	0.19	0.57	2.75	4.86	0.90	0.40	0.40	1.36	15	10
										30	15
										45	20
										60	25

Notes 1) All dimensions are in inches.
 2) All forces (lbs.) are nominal.
 3) Maximum load no more than 1" distance from front face of tensioner to centerline of idler — see page 21.

RT1000

- Die-cast aluminum construction
- Spring forces up to 30 lbs.
- Do not use on reciprocating applications such as IC engines and piston devices

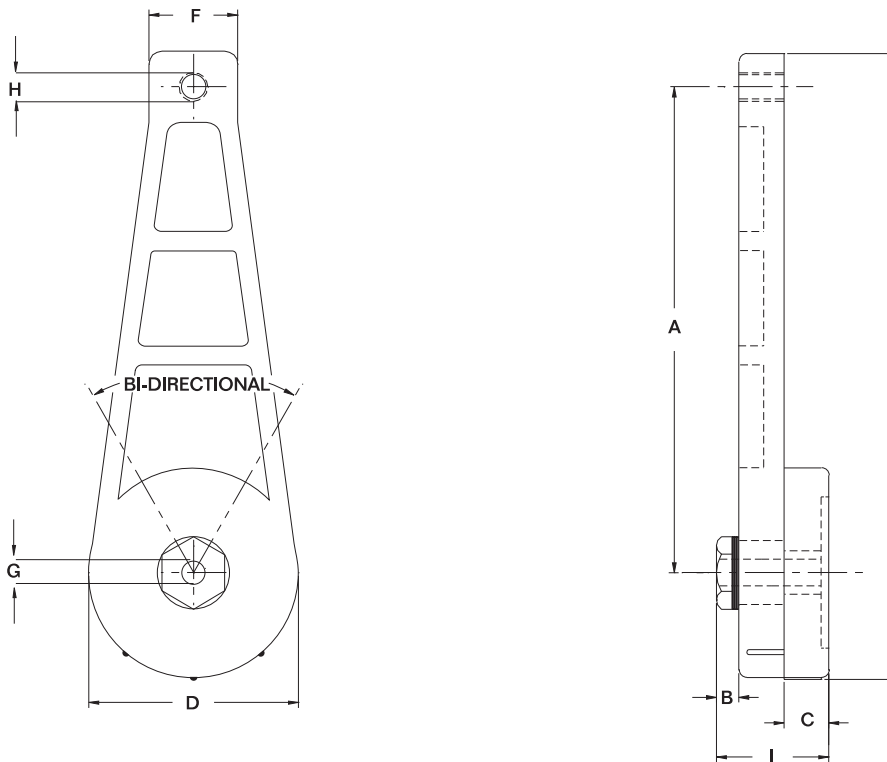


Part No.	A	B	C	D	E	F	G	H	I	Rotation (degrees)	Force ⁽²⁾ (lbs.)
RT1001	3.50	0.25	0.59	2.75	5.31	1.15	3/8-16	3/8-16	1.42	15	16
										30	23
										45	30
RT1003	3.50	0.25	0.59	2.75	5.31	1.15	0.40	3/8-16	1.42	15	16
										30	23
										45	30

- Notes
- 1) All dimensions are in inches.
 - 2) All forces (lbs.) are nominal.
 - 3) Maximum load no more than 1" distance from front face of tensioner to centerline of idler — see page 21.

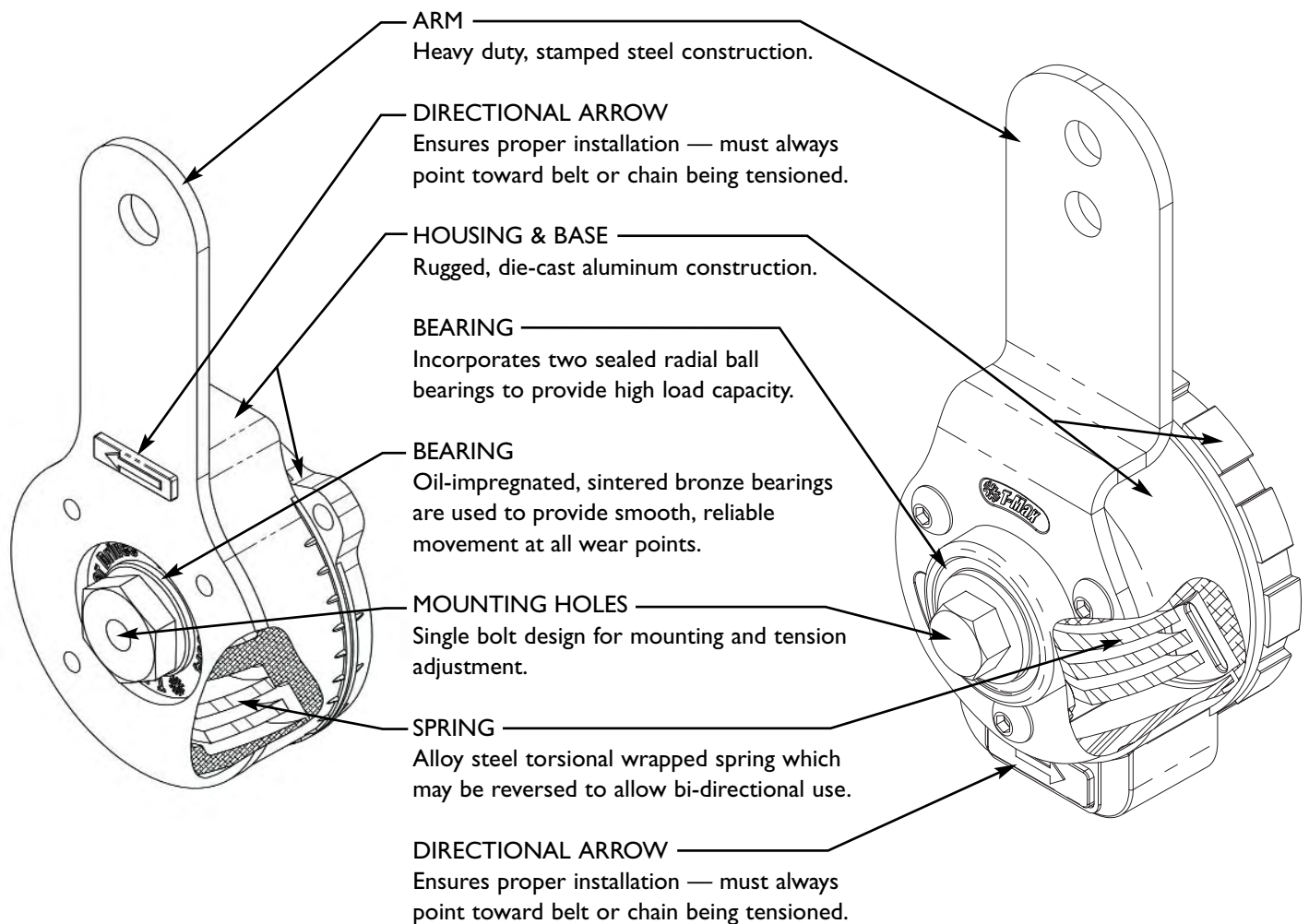
RT1600

- Die-cast aluminum construction
- Extended arm length
- Spring forces up to 26 lbs.
- Do not use on reciprocating applications such as IC engines and piston devices



Part No.	A	B	C	D	E	F	G	H	I	Rotation (degrees)	Force ⁽²⁾ (lbs.)
RT1601-L	6.37	0.25	0.59	2.75	8.24	1.12	3/8-16	3/8-16	1.42	15	10
										30	13
										45	16
RT1603-L	6.37	0.25	0.59	2.75	8.24	1.12	0.40	3/8-16	1.42	15	10
										30	13
										45	16
RT1601	6.37	0.25	0.59	2.75	8.24	1.12	3/8-16	3/8-16	1.42	15	20
										25	23
										35	26
RT1603	6.37	0.25	0.59	2.75	8.24	1.12	0.40	3/8-16	1.42	15	20
										25	23
										35	26

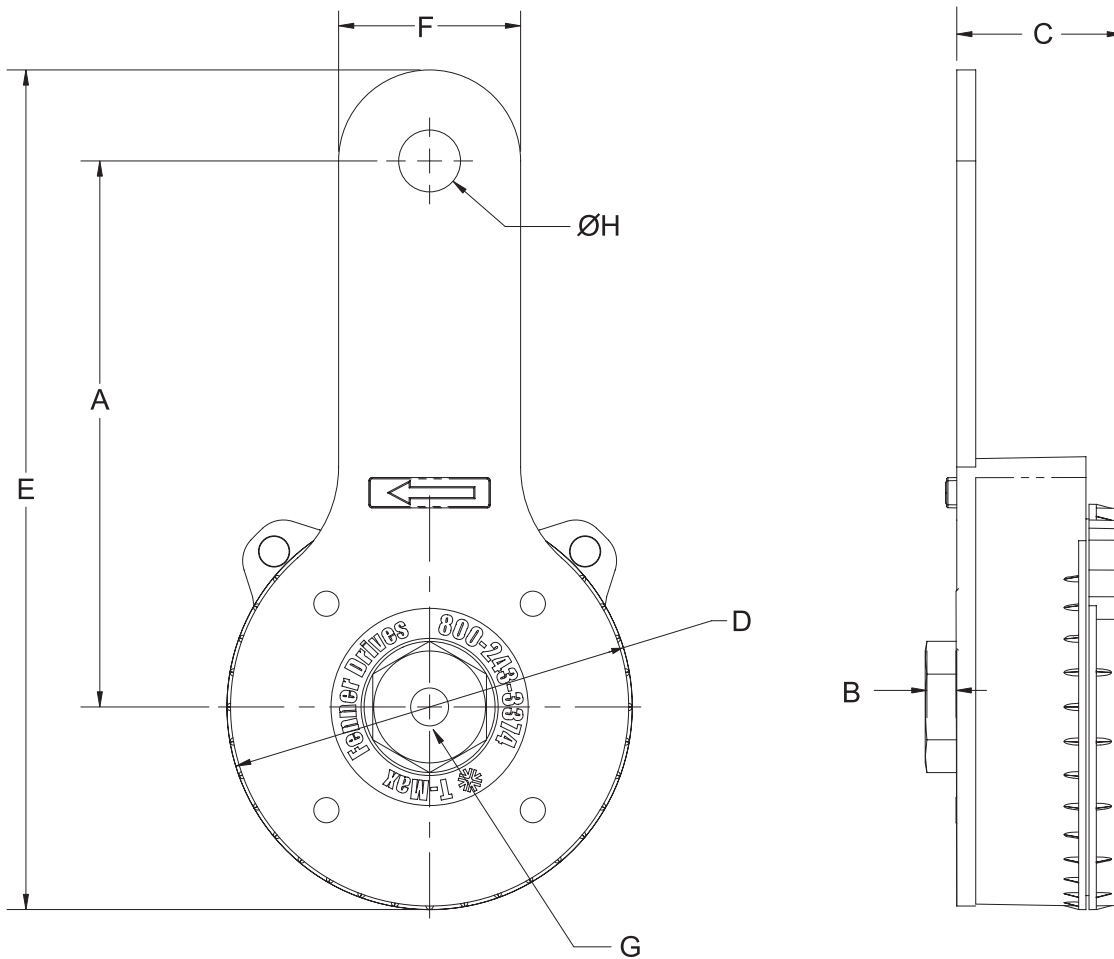
Notes 1) All dimensions are in inches.
 2) All forces (lbs.) are nominal.
 3) Maximum load no more than 1" distance from front face of tensioner to centerline of idler — see page 21.



- The industry's first medium- and heavy-duty tensioners for multiple belts
- Rugged, heavy-duty construction for heavy load applications
- Designed for use with single or multiple belts or strands of chain
- Arms available in custom lengths for optimum idler positioning
- No elastomeric tension members to cold-flow, fatigue or take a compression set
- Torsion spring absorbs momentary overloads and reduces vibration
- Ideal for use with single or multiple groove V- and flat belt idler pulleys, available from Fenner Drives
- For harsh environments, contact Applications Engineering

RT3000

- Heavy duty stamped steel arm
- Die-cast aluminum construction
- Spring forces up to 42 lbs.
- Suitable for use on reciprocating applications such as IC engines and piston devices

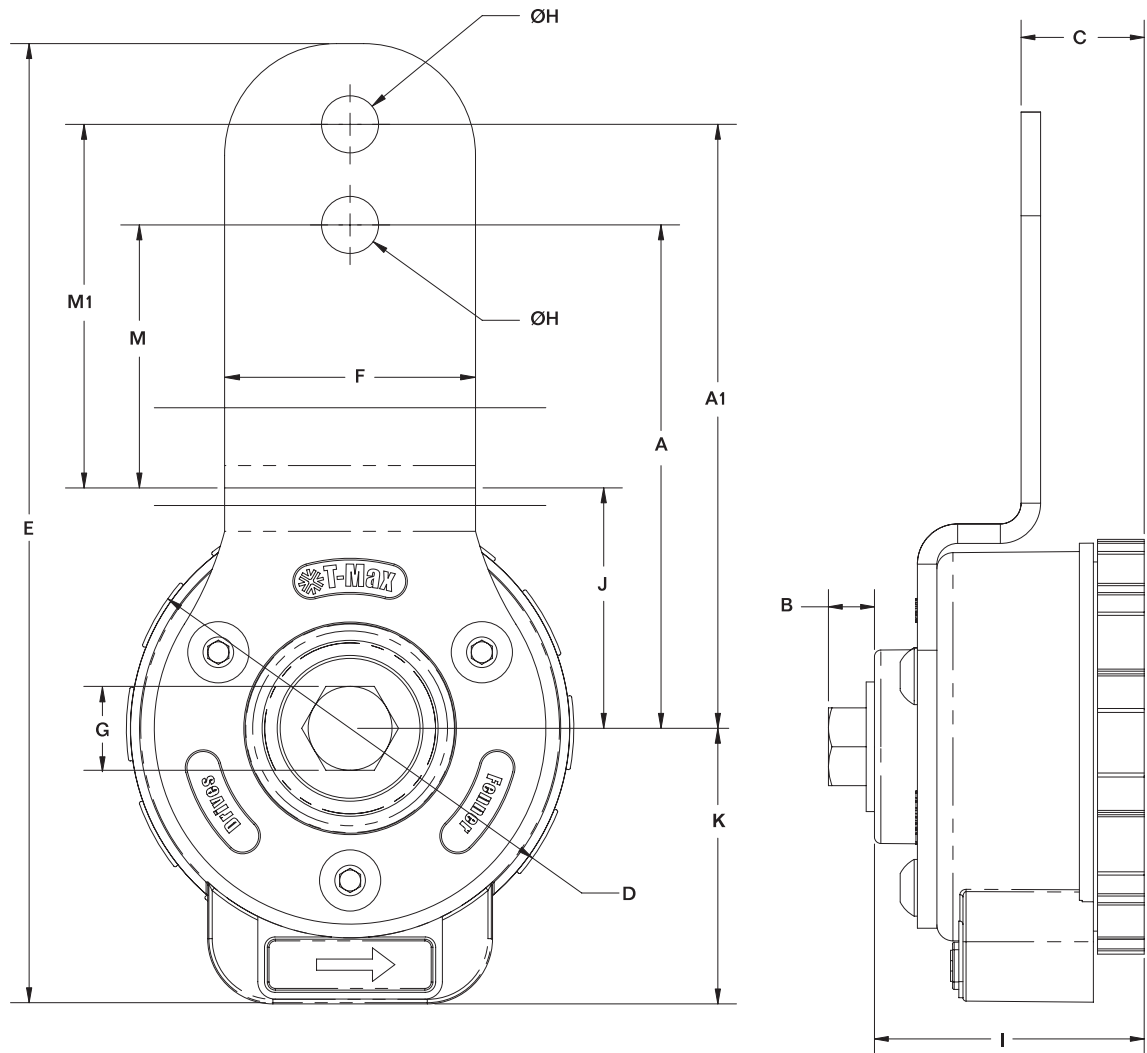


Part No.	A	B	C	D	E	F	G	H	Rotation ⁽³⁾ (degrees)	Force ⁽³⁾ (lbs.)
RT3000	4.50	0.26	1.37	3.34	6.92	1.50	3/8 - 16	0.51	0 - 70	0 - 42
RT3001	4.50	0.26	1.37	3.34	6.92	1.50	0.40	0.51	0 - 70	0 - 42

- Notes
- 1) All dimensions are in inches.
 - 2) Maximum load no more than 1½" distance from front face of tensioner arm to centerline of idler — see page 21.
 - 3) Dimension A: 1° rotation = .6 lb. force. All forces (lbs.) are nominal.

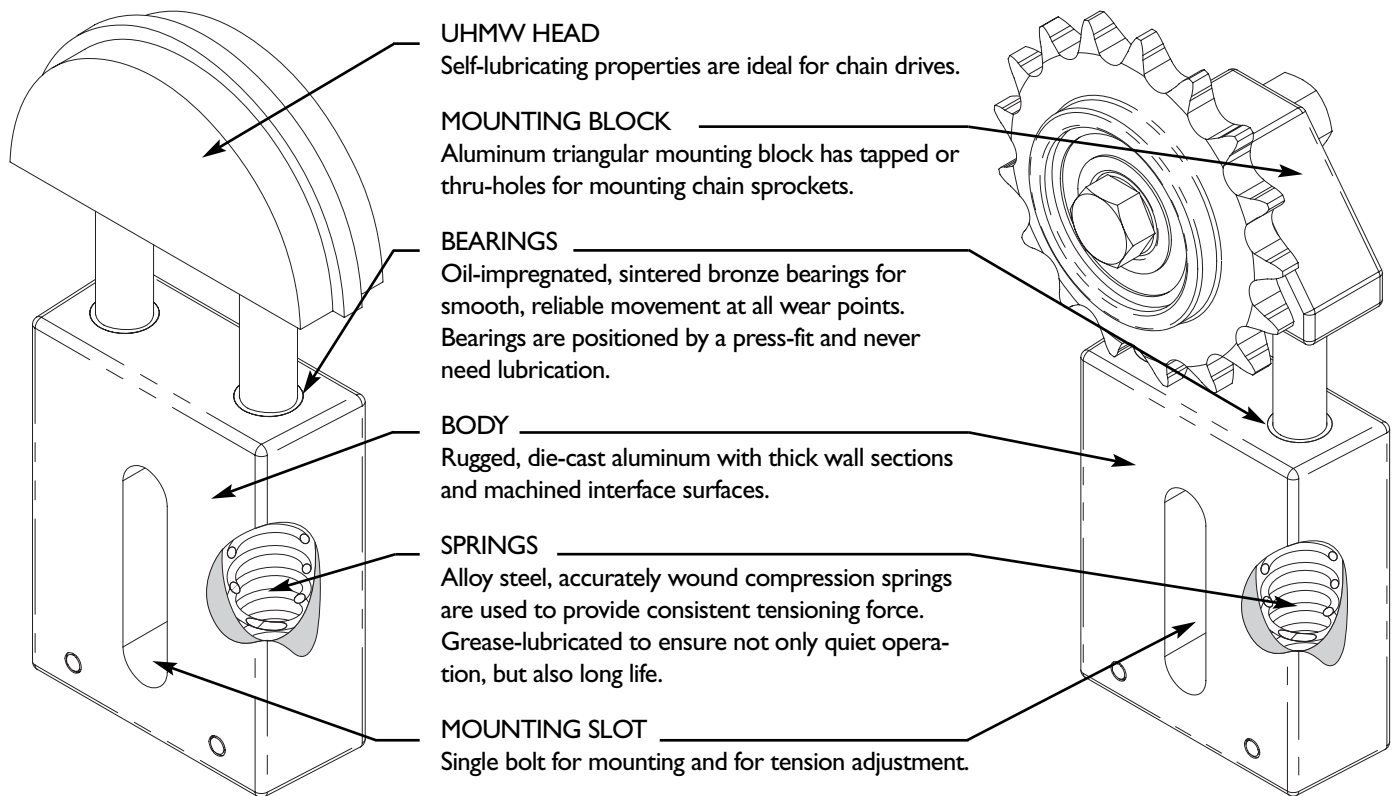
RT4000

- Heavy duty stamped steel arm
- Die-cast aluminum construction
- Spring forces up to 85 lbs.
- Suitable for use on reciprocating applications such as IC engines and piston devices



Part No.	A	A1	B	C	D	E	F	G	H	I	J	K	M	M1	Rotation ⁽³⁾ (degrees)	Force ⁽³⁾ (lbs.)
RT4000	4.50	5.40	0.49	1.19	4.00	8.58	2.24	1/2 - 13	0.51	2.60	2.15	2.46	2.35	3.25	0 - 85	0 - 85
RT4001	4.50	5.40	na	1.19	4.00	8.58	2.24	0.51	0.51	2.60	2.15	2.46	2.35	3.25	0 - 85	0 - 85

- Notes
- 1) All dimensions are in inches.
 - 2) Maximum load no more than 1 1/2" distance from front face of tensioner arm to centerline of idler — see page 21.
 - 3) Dimension A: 1° rotation = 1 lb. force. Dimension A1: 1° rotation = .83 lb. force. All forces (lbs.) are nominal.
 - 4) Requires a fixed head, hook style spanner wrench for tensioning (supplied with unit).



UHMW HEAD

Self-lubricating properties are ideal for chain drives.

MOUNTING BLOCK

Aluminum triangular mounting block has tapped or thru-holes for mounting chain sprockets.

BEARINGS

Oil-impregnated, sintered bronze bearings for smooth, reliable movement at all wear points. Bearings are positioned by a press-fit and never need lubrication.

BODY

Rugged, die-cast aluminum with thick wall sections and machined interface surfaces.

SPRINGS

Alloy steel, accurately wound compression springs are used to provide consistent tensioning force. Grease-lubricated to ensure not only quiet operation, but also long life.

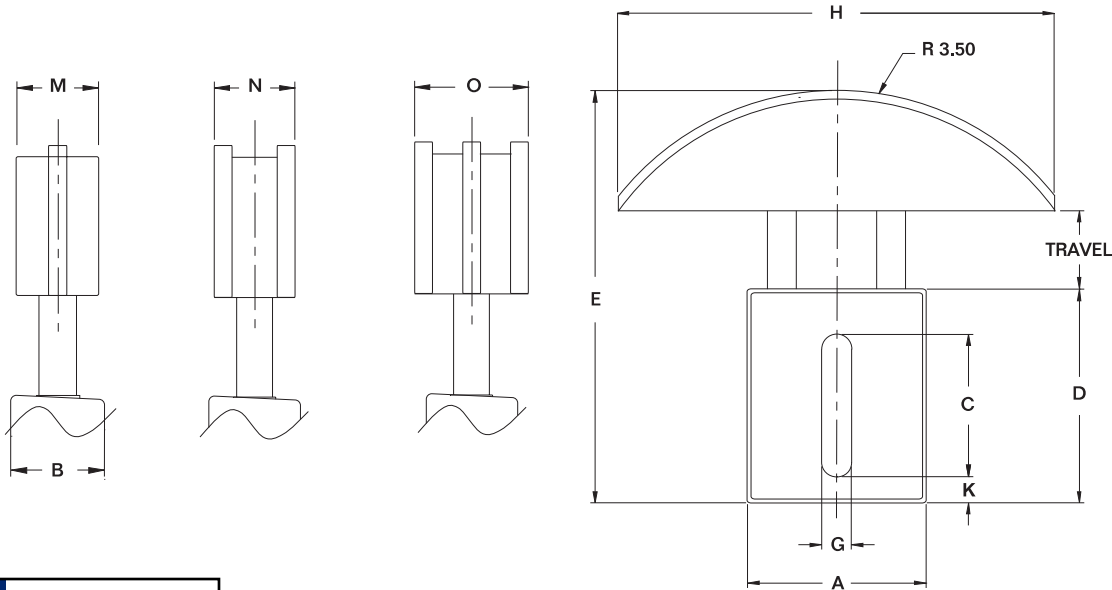
MOUNTING SLOT

Single bolt for mounting and for tension adjustment.

- Die-cast aluminum construction
- Easy installation and adjustment with single bolt feature
- Wide variety of sizes and mounting styles
- Improved performance and extended life for most fixed-center drives
- Built-in spring mechanism absorbs momentary overloads and reduces vibration
- Constructed from high-quality materials for proven durability
- Can be used in a host of industrial applications
- Fully automatic straight-line take up
- For harsh environments, contact Applications Engineering
- LT Series is ideal for use with PowerMax™ Idler Sprockets

CT1100, CT2100 and CT3100

- Large arc-shaped head guides the roller chain
- Head made from UHMW — its self-lubricating properties are ideal for chain drives
- Spring forces up to 200 lbs.



CT Series	Travel (inches)	Force ⁽³⁾ (lbs.)
1100-L	1.10	5 - 30
1100	0.85	15 - 40
2100	1.25	20 - 60
3100	1.65	45 - 100
3100-H	1.00	30 - 200
3196	1.00	45 - 100

Common Dimensions

Series	A	C	D	E	G	H	K
CT1100	2.31	1.80	2.91	5.52	0.42	5.50	.42
CT2100	2.95	2.36	3.52	6.51	0.49	5.50	.43
CT3100	3.54	2.95	4.25	7.60	0.57	5.50	.43

Single Chain

Double Chain

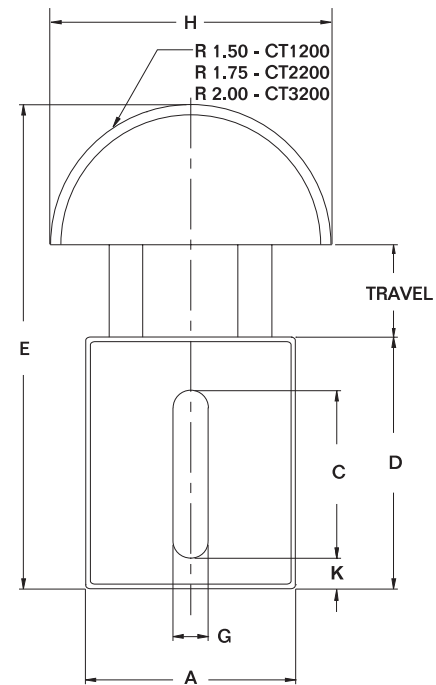
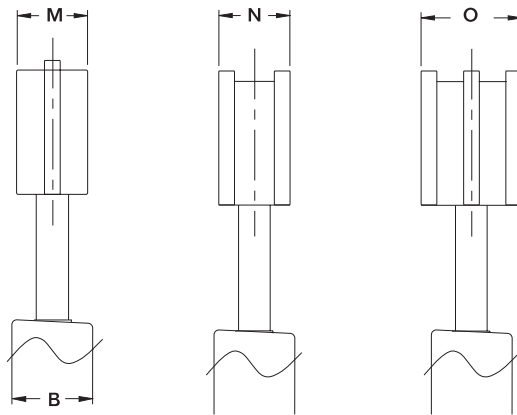
Triple Chain

Part No.	Chain	B	M	Part No.	Chain	B	N	Part No.	Chain	B	O
CT1101-L	#35	0.98	0.79	CT1103-L	#35	0.98	0.63	CT1105-L	#35	0.98	1.02
CT1101	#35	0.98	0.79	CT1103	#35	0.98	0.63	CT1105	#35	0.98	1.02
CT1102	#40	0.98	0.79	CT1104	#40	0.98	0.81	CT1106	#40	0.98	1.36
CT2101	#50	1.18	0.87	CT2103	#50	1.18	0.98	CT2105	#50	1.18	1.63
CT2102	#60	1.18	0.87	CT2104	#60	1.18	1.37				
CT3101	#80	1.38	0.98	CT3103	#80	1.38	1.81				
CT3102	#100	1.38	0.98								
CT3102-H	#100	1.38	0.98								
CT3196	#81X	1.38	1.75								

- Notes
- 1) All dimensions are in inches.
 - 2) These tensioners can be used on chain sizes up to #160 (see tensioner selection chart on page 19). Contact Fenner Drives applications engineering group for head dimensions.
 - 3) All forces (lbs.) are nominal.

CT1200, CT2200 and CT3200

- Small arc-shaped head for use when space is limited
- Head made from UHMW — its self-lubricating properties are ideal for chain drives
- Spring forces up to 200 lbs.



CT Series	Travel (inches)	Force ⁽³⁾ (lbs.)
1200-L	1.10	5 - 30
1200	0.85	15 - 40
2200	1.25	20 - 60
3200	1.65	45 - 100
3200-H	0.90	30 - 200

Common Dimensions

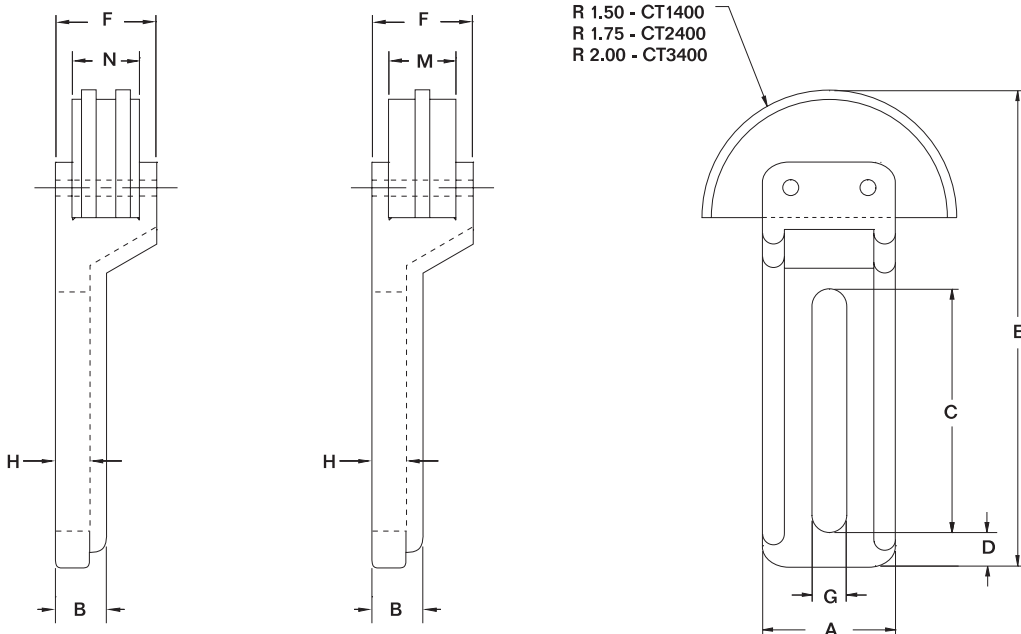
Series	A	C	D	E	G	H	K
CT1200	2.31	1.80	2.91	5.52	0.42	3.00	.42
CT2200	2.95	2.36	3.54	6.51	0.49	3.50	.43
CT3200	3.54	2.95	4.25	7.60	0.57	4.00	.43

Single Chain				Double Chain				Triple Chain			
Part No.	Chain	B	M	Part No.	Chain	B	N	Part No.	Chain	B	O
CT1201-L	#35	0.98	0.79	CT1203-L	#35	0.98	0.63	CT1205-L	#35	0.98	1.02
CT1201	#35	0.98	0.79	CT1203	#35	0.98	0.63	CT1205	#35	0.98	1.02
CT1202	#40	0.98	0.79	CT1204	#40	0.98	0.81	CT1206	#40	0.98	1.36
CT2201	#50	1.18	0.86	CT2203	#50	1.18	0.98	CT2205	#50	1.18	1.75
CT2202	#60	1.18	0.86	CT2204	#60	1.18	1.37				
CT3201	#80	1.38	0.98	CT3203	#80	1.38	1.81				
CT3202	#100	1.38	0.98								
CT3202-H	#100	1.38	0.98								

- Notes
- 1) All dimensions are in inches.
 - 2) These tensioners can be used on chain sizes up to #160 (see tensioner selection chart on page 19). Contact Fenner Drives applications engineering group for head dimensions.
 - 3) All forces (lbs.) are nominal.

CT1400, CT2400, and CT3400 Fixed

- An economical tensioner for use when automatic tensioning is not required
- Slotted frame for quick and precise adjustment in any direction
- Head made from UHMW — its self-lubricating properties are ideal for chain drives
- For single and double chain applications

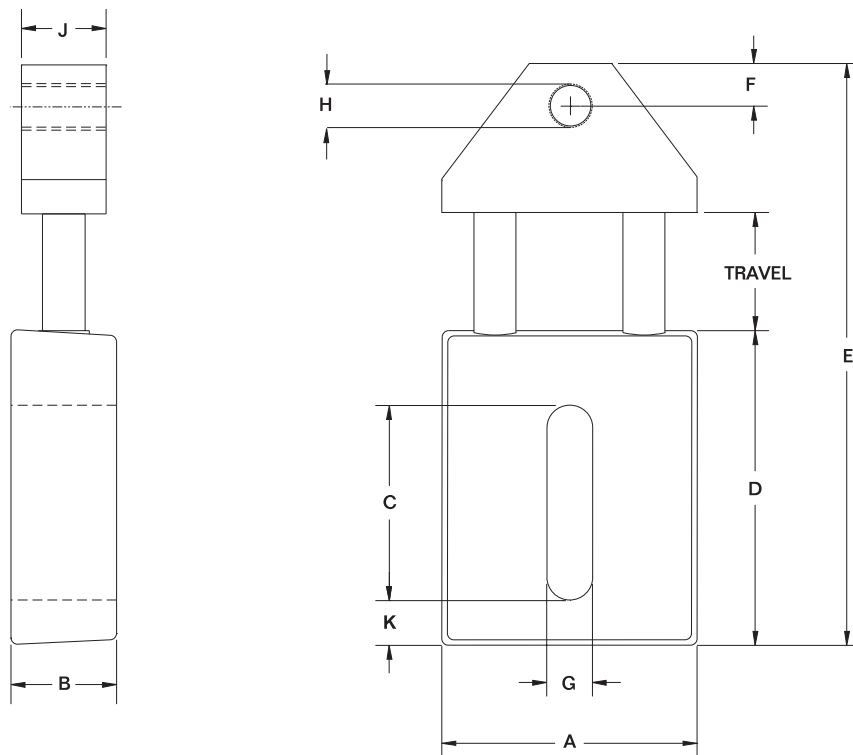


Part No.	A	B	C	D	E	F	G	H	M	N	Chain
CT1401	1.56	0.59	2.87	0.39	5.60	1.18	0.41	0.39	0.79	—	#35
CT1402	1.56	0.59	2.87	0.39	5.60	1.18	0.41	0.39	—	0.79	#35
CT1403	1.56	0.59	2.87	0.39	5.60	1.18	0.41	0.39	0.79	—	#40
CT1404	1.56	0.59	2.87	0.39	5.60	1.18	0.41	0.39	—	0.95	#40
CT2401	1.97	0.71	3.35	0.47	6.50	1.42	0.51	0.47	0.86	—	#50
CT2402	1.97	0.71	3.35	0.47	6.50	1.42	0.51	0.47	—	1.11	#50
CT2403	1.97	0.71	3.35	0.47	6.50	1.42	0.51	0.47	0.86	—	#60
CT2404	1.97	0.71	3.35	0.47	6.50	1.42	0.51	0.47	—	1.53	#60
CT3401	2.36	0.77	3.23	0.51	6.68	1.57	0.51	0.55	0.98	—	#80
CT3402	2.36	0.77	3.23	0.51	6.68	1.57	0.51	0.55	—	1.98	#80

Note All dimensions are in inches.

LT1000, LT2000, and LT3000

- Ideal for use with Fenner Drives Roller Chain Idler Sprockets
- Spring forces up to 200 lbs.



Part No.	A	B	C	D	E	F	G	H	J	K	Travel (inches)	Force ⁽³⁾ (lbs.)
LT1001-L	2.31	0.98	1.80	2.91	5.52	0.39	0.42	3/8 - 16	0.79	0.42	1.10	5 - 30
LT1001	2.31	0.98	1.80	2.91	5.52	0.39	0.42	3/8 - 16	0.79	0.42	0.85	15 - 40
LT1002	2.31	0.98	1.80	2.91	5.52	0.39	0.42	0.40	0.79	0.42	0.85	15 - 40
LT2001	2.95	1.18	2.36	3.54	6.81	0.47	0.49	1/2 - 13	0.98	0.43	1.25	20 - 60
LT2002	2.95	1.18	2.36	3.54	6.81	0.47	0.49	0.51	0.98	0.43	1.25	20 - 60
LT3001	3.54	1.38	2.95	4.25	8.27	0.55	0.57	1/2 - 13	1.18	0.43	1.65	45 - 100
LT3002	3.54	1.38	2.95	4.25	8.27	0.55	0.57	0.51	1.18	0.43	1.65	45 - 100
LT3002-H	3.54	1.38	2.95	4.25	8.27	0.55	0.57	0.51	1.18	0.43	0.90	30 - 200

- Notes
- 1) All dimensions are in inches.
 - 2) Maximum load no more than 1" distance from front face of tensioner to centerline of idler — see page 21.
 - 3) All forces (lbs.) are nominal.



Tensioner Selection Chart for Roller Chain Drives

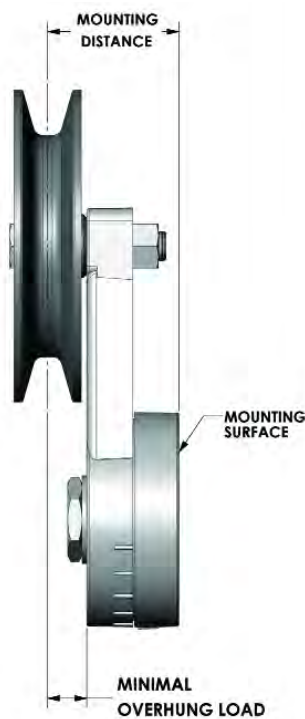
Rotary and Linear Tensioners — Single Chain

Model Series	Chain Size								
	#35	#40	#50	#60	#80	#100	#120	#140	#160
RT0500	X	X	X						
RT1600-L	X	X	X						
RT1600	X	X	X	X	X				
RT1000	X	X	X	X	X				
RT3000				X	X	X			
RT4000						X	X	X	
LT/CT1000-L	X	X	X						
LT/CT1000	X	X	X	X	X	X			
LT/CT2000			X	X	X	X			
LT/CT3000					X	X	X	X	
LT/CT3000-H								X	X

Rotary and Linear Tensioners — Double Chain

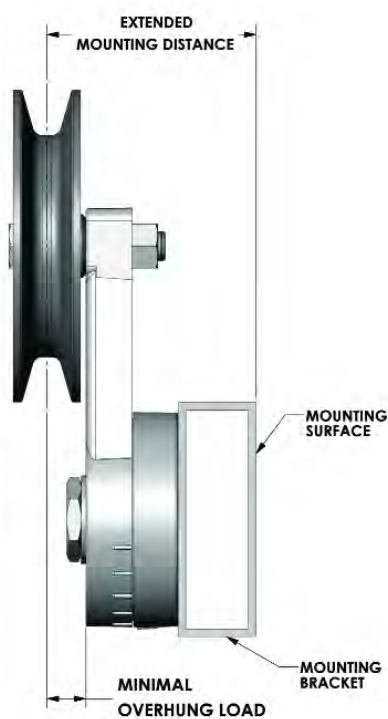
Model Series	Chain Size								
	#35	#40	#50	#60	#80	#100	#120	#140	#160
RT0500	X	X							
RT1600-L	X	X							
RT1600	X	X	X	X					
RT1000	X	X	X	X					
RT3000				X	X	X			
RT4000					X	X			
LT/CT1000-L	X	X							
LT/CT1000	X	X	X	X	X				
LT/CT2000			X	X	X				
LT/CT3000					X	X			
LT/CT3000-H							X	X	X

Overhung Load Information



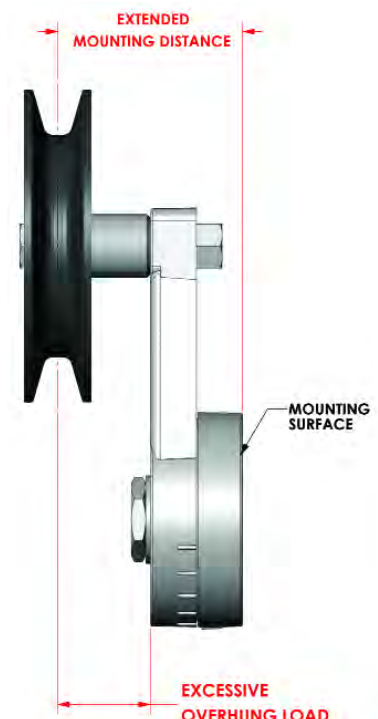
IDEAL APPLICATION

Fig. 1



RECOMMENDED FOR EXTENDED MOUNTING DISTANCES

Fig. 2



NOT RECOMMENDED FOR EXTENDED MOUNTING DISTANCES

Fig. 3

Correct

Incorrect

To receive a full measure of performance from the tensioner/idler assembly, it is important to keep overhung loads to a minimum. Fig. 1 illustrates a properly designed tensioner/idler assembly where the overhung load is located close to the tensioner arm.

Overhung load is directly related to the tensioner mounting location. When considering a tensioner/idler assembly, the idler should be mounted close to the tensioner arm and then the tensioner/idler assembly positioned on the mounting surface. In some instances it may be necessary to fabricate a new mounting bracket or add plates, spacers, channel, etc. to the existing mounting surface to position the assembly allowing for correct alignment of the idler with the driveR and driveN components as illustrated in Fig. 2.

Although it is easy to move the idler further away from the tensioner arm to achieve correct alignment with the driveR and driveN, this is NOT the correct thing to do. Fig. 3 illustrates a poorly designed tensioner/idler assembly. Note the distance from the idler to the tensioner is excessive. This arrangement will introduce excessive load on the idler mounting bolt, tensioner arm and the tensioner body. The result will be poor performance and premature failure of the tensioner.

If in doubt, contact Fenner Drives' applications engineering group for assistance.

Frequently Asked Questions

When should I use a rotary versus linear tensioner?

A linear moves in a straight line and a rotary swings in an arc. Sometimes mounting location, drive configuration, etc., will not permit the use of one versus the other. The application should be closely reviewed to determine which tensioner is best suited. We can help you determine which is best for your application — just give us a call.

Which tensioner is the best one for my application?

Generally, the rotary style is primarily used on belt drives, although it can also be used with chain drives. The CT linear tensioner with the UHMW head is the most popular on chain drives.

Can I use the tensioner/idler on the backside of a belt?

Yes. Although a backside idler increases wrap angle and power transmission capacity, it does introduce a reverse or back bend in the belt that will shorten belt life. Consult with the belt manufacturer for minimum pulley diameter and location.

My drive reverses — where do I position the tensioner/idler?

Spring-loaded tensioners should never be used on reversing drives. If they are, when the drive reverses the slack side becomes the tight side and vice versa. A tensioner designed for the slack side would then have inadequate spring force to maintain belt tension.

How do I determine what size tensioner/idler I need for my belt drive?

Selection of the proper size tensioner can be made using the guidelines specified in this catalog. Consult with the belt manufacturer, who can determine the right amount of spring force based on the application and drive parameters.

I have some contaminants in my application — will they have any effect on the tensioner?

Our tensioners are made from glass filled nylon or aluminum. Although many chemicals/oils will not affect them, they are not resistant to all. Contact Fenner Drives' applications engineering group with the contaminants present and we'll make a recommendation.

On my belt or chain drive, where should the tensioner/idler be located?

Always install the tensioner/idler on the slack side of the drive.

Where is the best place on my V-belt drive to locate a tensioner/idler?

Preferably, a tensioner/idler should be located on the inside of the drive. Optimum placement would be where it provides nearly equal arcs of contact on both the driveR and driveN pulleys.

Where do I position the tensioner on my chain drive?

The tensioner should be located on the slack or sag side of the chain and outside the perimeter of the chain strand.

I am using chain other than standard ANSI roller chain. Can I get the UHMW head on a CT linear tensioner to match my chain?

Consult Fenner Drives' applications engineering group. We have been able to design and furnish many special UHMW heads.

Do I need to periodically grease the springs?

In most cases, no. The springs are pre-lubricated at the factory and the unit is assembled. However, on occasion an application may dictate the need for re-lubrication. Contact Fenner Drives' applications engineering group. We may be able to design a tensioner with a fitting that will allow this.

Where should I position the tensioner in the chain span?

Unless a chain guide is being used, the tensioner should be located an equal distance from the driveR and driveN sprockets.

My chain drive appears to have excessive slack — will a tensioner help this problem?

Usually, under normal conditions chain slack should not exceed 4% of the span. For unusual conditions such as heavy loads, frequent starts/stops, etc. it should not exceed 2% of the span. Excessive chain slack usually occurs on drives with long spans. Typically a span greater than 50P (P = chain pitch) will require a tensioner.