



## Chain Tensioners & Idlers



# BLACK ACE® CHAIN TENSIONERS & IDLERS

Maximize the full potential of your roller chain and sprocket life with chain tensioners and idlers from Black Ace Parts®. Our extremely durable Snugulator® and IdleMaster® decrease the amount of movement required to keep your chain moderately tensioned, eliminating chain run-out and reducing chain flexing to create a smooth, free chain run. Because our chain tensioners and idlers rotate freely with the speed of the roller chain, roller spin and chain whipping are eliminated, which in turn greatly reduces excess noise. In addition, these heavy-duty products are insensitive to chain wear to remain independent of chain pitch, and are great enhancements to a wide variety of equipment.

IMPROVE ROLLER CHAIN LIFE.



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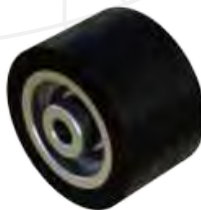
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**Snugulators® and IdleMasters®** reduce noise and increase the life of chains and belts. These precision-machined heat-treated steel parts are ideal for high-pressure-point areas, and perform smoothly on both worn and new chain.

- Snugulator® tighteners are available with and without flanges. Use a flanged Snugulator® for longer span chains and belts.
- The Snugulator® is usually used on the slack side of the roller chain drive, but can be used on the tensioned side with very little deflection.
- The Snugulator® should be placed a proper distance from the sprocket for minimum pressure.
- Unlike many idler sprockets, the Snugulator® tightener lasts a long time and is not sensitive to chain wear. Both new and worn chain can safely run on the same Snugulator®.

#### **BLACK ACE® IDLEMASTER®**

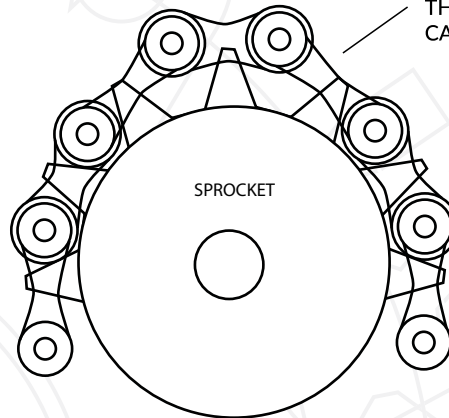
- Used in place of idler sprockets
- Increases roller chain life dramatically
- Not sensitive to pitch variances of the roller chain
- High RPM bearings
- Precision-made from long-lasting steel
- Heat-treated versions available
- Belt style is a precision one-piece for high RPM
- Design and production for custom applications

#### **BLACK ACE® SNUGULATOR®**

- Used in place of idler sprockets
- Increases roller chain life dramatically
- Not sensitive to pitch variances of the roller chain
- High RPM bearings
- Steel and rubber construction
- Design and production for custom applications
- Multiple mountings available

**KEEP YOUR EQUIPMENT RUNNING SMOOTH.**

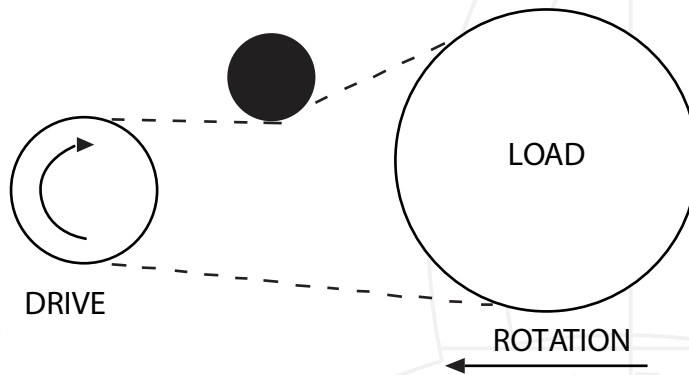
# CAUSES OF PREMATURE CHAIN & SPROCKET WEAR



CHAIN WEAR AND STRETCH WILL CAUSE GROUPING AND EXCESSIVE WEAR TO THE SPROCKET, A MAJOR CAUSE OF WHIPPING.

## IdleMasters® reduce noise and increase life of chains and belts.

- **Vertical Run-Out** (perpendicular to the bore) on any portion of the drive sprockets and idlers causes premature wear, as the chain tightens and loosens in small increments on the slack side. It's not uncommon to find run-out on a chain measured on the rollers as it is engaged on the sprocket to be .010" or more. In a 3-foot center-to-center distance between sprockets with a .006" run-out on both sprockets, the maximum center point of deflection is about ½ inch.
  - Consider all the sprockets and idlers in the system. Due to the drive and driven sprockets and idlers having different diameters, run-out may require more chain. At that point a spring-loaded tensioner may be used. This may seem like a reasonable solution, but many times it decreases chain life since it flexes the chain more and increases roller spin. However, in many drives it becomes necessary.
  - The greater the number of sprockets in contact with the chain drive, the greater the chance of more movement of the spring-loaded chain tensioner, causing more wear. A rhythm develops as the chain runs, and the sound becomes more noticeable as time goes on.
- 
- **Lateral Run-Out** (parallel to the bore) of the drive sprockets moves the chain from side to side, greatly diminishing the life of the roller chain. By engaging the inside sidebars of the chain against the sprocket teeth, heat is created, causing the chain to slightly bend. In addition, this causes uneven stress as the chain is deflected from side to side, weakening the strength of the chain, shortening its life and causing premature failure. Lateral run-out usually occurs in large diameter sprockets, caused by a slightly warped plate, bent shaft, idlers or poor alignment.
  - **Roller Spin** occurs when the chain enters and exits a sprocket, and increases as the chain begins to wear. This condition wears the internal portion of the roller and the pin of the roller chain, making it impossible for the chain to be firmly seated into the root of the sprocket. This causes chain grouping and a slight whipping action. As the roller of the roller chain begins to enter into the sprocket, it may roll very slightly into the sprocket root position under a high load. When the roller chain exits the sprocket, an instant acceleration of the roller occurs as it rolls off the sprocket tooth, causing roller spin, increased noise and heat as the chain wears.
  - The greatest contributors to roller spin are solid chain slides. After the sidebars of the chain wear into the slides, the rollers are in full contact with the slide, causing the rollers of the chain to spin. For every 100ft per minute that the chain travels, an 80-pitch roller chain will turn at about 500 rpm. Many roller chains run faster, causing the rollers of the chain to accelerate wear and increase noise.



- **Troubleshooting**

On a long drive with several sprockets, it's important to keep sprocket run-out to a minimum. Even very slight run-out creates noticeable movement on a chain tightener.

- **Problem**

The chain is whipping on the power side. It makes a vibrating, snapping sound.

- **Possible Causes**

The chain or sprocket is worn, causing chain grouping.

When chain pitch is greater than the pitch of the sprocket tooth, some chain rollers fail to come in contact with the bottom of the tooth. As this section of chain comes off the load sprocket, the sudden excess of chain causes a momentary slack. The drive sprocket takes it up quickly and forcibly, creating a snap or jerk accompanied by noise, vibration and undue stress on the entire drive chain.

- Chain wear and stretch will cause grouping and excessive wear to the sprocket, a major cause of whipping.
- **Poor Sprocket Alignment** creates heat and may even bend the shafts on the drive system, causing great damage.
- **Poor Pitch Integrity** of chain and sprockets also causes premature failure. Because they are dependent on one another, good chain life will also result in optimal sprocket life.

## NOTES | DRAWINGS

# TIPS FOR MAXIMIZING ROLLER CHAIN & SPROCKET LIFE



- **Lubrication** can aid in the life of the roller chain by greasing the inside link as it flexes on the pin of the chain and lubricates the inside of the roller and pin mating surfaces. It can also help in reducing friction between inside portions of the link, which come in contact with the sprockets. When searching for lubricants, the best options are ones that don't attract foreign particles, which in turn could act as abrasive compounds.
- **Keep the roller chain tensioned** on the slack side of the drive system to reduce the whipping movement that may occur as the roller chain exits the sprocket.
- **Keep the roller chains in a vertical position.** Roller chain is not designed to bear its weight on the links, as it will create friction with the sprocket, shortening its life substantially and eventually working its way off the sprocket or idler, causing damage to the equipment.
- **Minimize the flexing of the roller chain.** The larger the sprocket, the smaller the flex angle of the links is in relation to each other. As a basic rule, large diameter sprockets are easier on the roller chain than small diameter sprockets. The more gentle the flex of the chain, the longer its life.








## NOTES | DRAWINGS








# BLACK ACE® IDLEMASTER®



- Used in place of idler sprockets
- Increases roller chain life dramatically
- Not sensitive to pitch variances of the roller chain
- High RPM bearings
- Precision-made from long-lasting steel
- Heat-treated versions available
- Belt style is a precision one-piece for high RPM
- Design and production for custom applications

	PART NUMBER	ANSI CHAIN SIZE	DIAMETER	TOTAL WIDTH	STANDOFF LENGTH	THROUGH HOLE	BEARING
	2662BDE1X	60-2	3.236	1.865	.511/.560	1/2"	(2) BGA
	2662BDE2X	60-2	3.236	1.865	.511/.560	5/8"	(2) BGA
	2662BDE3X	60-2	3.236	1.865	.511/.560	3/4"	(2) BGA
	28100-2B3X	100	4.950	1.625	.105/.130	3/4"	(2) BGA
	28100B3X	100	3.513	1.625	0.04	3/4"	(2) BGA
	28120B3X	120	4.950	1.625	.130/.105	3/4"	(2) BGA
	2856BE1X	50 OR 60	3.450	1.550	0.04	1/2"	(1) BGA
	2856BE2X	50 OR 60	3.450	1.550	0.04	5/8"	(1) BGA
	2856BE3X	50 OR 60	3.450	1.550	0.04	3/4"	(1) BGA
	28684B2X	60 OR 80	3.950	1.750	.04/.068	5/8"	(2) BGA
	2868B2X	60 OR 80	3.236	1.625	.09/.126	5/8"	(2) BGA
	2868B3X	60 OR 80	3.236	1.625	.09/.126	3/4"	(2) BGA
	2868BD2X	60 OR 80	3.236	1.625	.126/.358	5/8"	(2) BGA
	2868BD3X	60 OR 80	3.236	1.625	.126/.358	3/4"	(2) BGA
	2868BDE2X	60 OR 80	3.236	1.625	.293/.358	5/8"	(2) BGA
	2868BDE3X	60 OR 80	3.236	1.625	.293/.358	3/4"	(2) BGA



	PART NUMBER	ANSI CHAIN SIZE	DIAMETER	TOTAL WIDTH	STANDOFF LENGTH	THROUGH HOLE	BEARING
	2868F4B3X	60 OR 80	3.950	1.750	.068/.040	3/4"	(2) BGA
	2868F4BD2X	60 OR 80	3.950	1.750	.336/.040	5/8"	(2) BGA
	2868FB2X	60 OR 80	3.450	1.750	.04/.068	5/8"	(2) BGA
	2868FB3X	60 OR 80	3.450	1.750	.04/.068	3/4"	(2) BGA
	2868FBD2X	60 OR 80	3.450	1.750	.04/.336	5/8"	(2) BGA
	2868FBD3X	60 OR 80	3.450	1.750	.04/.336	3/4"	(2) BGA
	2868FBDE3X	60 OR 80	3.450	1.750	.230/.336	3/4"	(2) BGA
	2882TBD3X	80-2	3.236	2.375	0.0/- .272	3/4"	(2) BGA
	2885B3	80	8.450	1.250	0.015/- .005	3/4"	(2) BGA
	W56851SASSY	80	8.450	1.250	N/A	1-7/16"	(1) BGLH

## NOTES | DRAWINGS

### BEARING INFORMATION

BGA – A 52MM (6205) Bearing used in high-speed applications

BGAS – A 52MM (6205) Bearing used in low to moderate speed applications where high contamination is present

BGF – A 52MM Collar locking bearing used in low to moderate speed applications where moderate contamination is present (used only for 1" shaft mounts)

BGBS – A 40MM (6203) Bearing used in low to moderate speed applications where high contamination is present

BGB – A 40MM (6203) Bearing used in high-speed applications

NB21 – A Fixed Bearing used in underwater applications

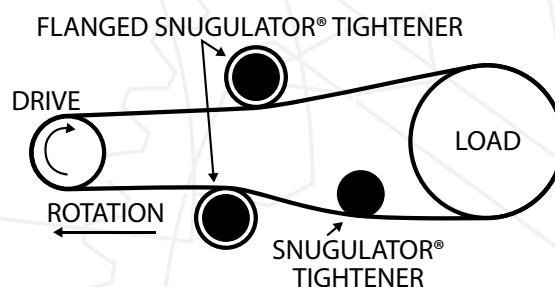
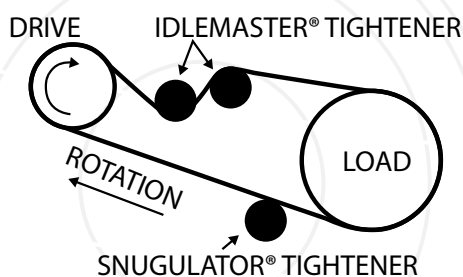
### AUXILIARY SEAL INFORMATION

NRT – An auxiliary bearing seal that provides excellent protection in high contamination areas to greatly improve bearing life. The NRT seal has a low friction coefficient, providing low bearing drag.

# IDLEMASTER® APPLICATIONS



- Roller chains
- Locations on the drive system:
  - Surging loads
  - Load-bearing locations
  - Spring-loaded tensioners
  - Replacement of any idler sprocket
  - Chain wrap of 25 degrees or more
  - Large roller chain pitches which require larger diameters



- The Snugulator® is usually used on the slack side of the roller chain drive, and used on the tensioned side with very little deflection.
- Snugulator® Tighteners are available with and without flanges. Use a flanged Snugulator® for longer span chains and belts.
- The Snugulator® should be placed a proper distance from the sprocket for minimum pressure.
- Unlike many idler sprockets, the Snugulator® Tightener lasts a long time and is not sensitive to chain wear. Both new and worn chain can safely run on the same Snugulator®.

## NOTES | DRAWINGS








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	PART NUMBER	ANSI CHAIN SIZE	DIAMETER	TOTAL WIDTH	STANDOFF LENGTH	THROUGH HOLE	BEARING
	2075CA	25, 35, 40	2.000	0.750	0.05	5/16"	(1) BGT
	2525-2X	40, 50, 60, 80	2.500	2.240	.045/-.855	1/2"	(2) BGBH
	2555CD1	40, 50, 60, 80	2.500	2.240	.25	1/2"	(2) BGB
	2755C1X	40, 50	2.750	1.000	.05/.043	1/2"	(1) BGBS
	2755CB2X	40, 50	2.750	1.000	-0.14	5/8"	(1) BGBH
	2755FCB2X	40, 50	2.750	1.000	-0.14	5/8"	(1) BGBH
	2713CB2X	40, 50, 60	2.750	1.345	-0.34	5/8"	(1) BGBH
	2550BE1X	40, 50, 60	3.500	1.375	.180/.092	1/2"	(1) BGA
	2550BE2X	40, 50, 60	3.500	1.375	.180/.092	5/8"	(1) BGA
	2550BE3X	40, 50, 60	3.500	1.375	.180/.092	3/4"	(1) BGA

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	2550FBE1X	40, 50, 60	3.500	1.375	.180/.092	1/2"	(1) BGA
	2500BD1X	60, 80, 100	3.500	2.125	.127/- .144	1/2"	(2) BGA
	2500BD2X	60, 80, 100	3.500	2.125	.127/- .144	5/8"	(2) BGA
	2500BD3X	60, 80, 100	3.500	2.125	.127/- .144	3/4"	(2) BGA
	2500BE1X	60, 80, 100	3.500	2.125	.057/.044	1/2"	(2) BGA
	2500FBD2X	60, 80, 100	3.500	2.125	.127/- .144	5/8"	(2) BGA
	2500BSS1X	60, 80, 100	3.500	2.125	.057/0	1/2"	(2) BGA

NOTES   DRAWINGS	

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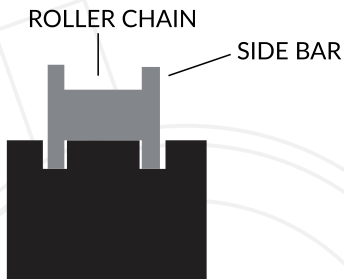
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# SNUGULATOR® APPLICATIONS

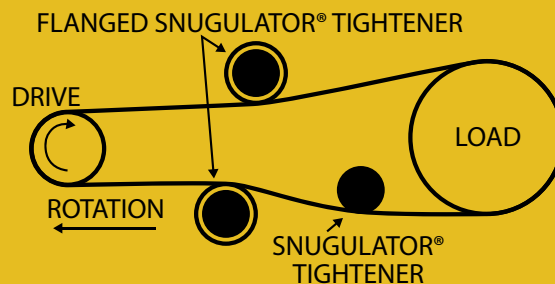
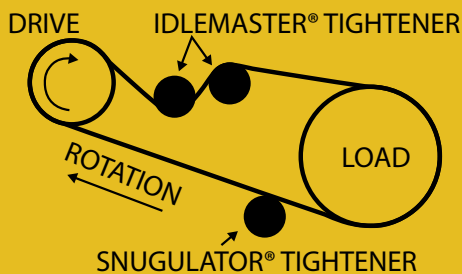


- Roller chains
- Locations on the drive system:
  - Low tension requirements
  - Used on load side of drive with slight deflection to eliminate chain whipping
  - Makes grooves into the rubber to act like a rolling shock absorber, giving the chain a cushion for a quiet and gentle ride.

## Grooves Are Normal

The side bars will wear grooves into the Snugulator® tightener after a period of time. When rollers from chain make contact with the Snugulator® tightener, it will virtually quit wearing.

Grooves are usually worn into Snugulator® tighteners during their first hours of operation. These grooves extend to the chain's roller. This grooving stops as soon as the chain rollers make full contact with the rubber-like surface of the Snugulator®.



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# Additional Products



Idler Wheel Rollers



Sprockets



Chain Tensioners



Chain Idlers



Torque Limiter Clutches



Articulating Hitches



Bearing Protectors



Friction Drive Rollers



Shakers



CNH Enhancements



Steel Pillow Blocks

## TEROG MANUFACTURING



Terog Manufacturing builds quality Black Ace® parts for a wide variety of original equipment, as well as a large selection of replacement parts. Family-owned and -operated since 1971, Terog Manufacturing is a specialist in improving equipment performance and profitability.



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