

U WOINGHORESE ISUBACI USA



**Premium Elevator Series** 

# **WORKHORSE® Series**

Engineered to be "The Workhorse" of the Industrial Elevator Segment. Utilizes premium steels throughout, combined with proprietary and precisely controlled heat treatments, to ensure market leading reliability.



### **TYPICAL APPLICATIONS**

### **Bucket Elevators**

- Centrifugal Systems
- Continuous Discharge

#### PINS

- Alloy or premium grade carbon steel.
- Heat treated for superior strength and toughness.
  - Core Through hardened for superior impact resistance.
  - □ Surface Case or Induction hardened for extended wear resistance.
- Precision manufactured to maintain high interference fit with sidebars.
  Prevents pin rotation and subsequent sidebar wear.

### BUSHINGS

- Alloy or premium grade carbon steel.
- Heat treated for superior strength.
  - □ Core Through hardened for toughness/impact resistance.
  - □ Surface Case hardened for ultimate/extended wear resistance.
- Precision machined to maintain smooth bearing surfaces and high interference fit with sidebars.
  - $\hfill\square$  Favorable residual stresses resist fatigue and allow for extended life.

### SIDEBARS

- Alloy or premium grade carbon steel.
- Through hardened for superior strength, toughness and fatigue resistance.
- Proprietary manufacturing processes ensure consistent hole quality and precise pitch control.
  - [] Favorable residual stresses resist fatigue and allow for extended life.

### **ROLLERS (4000 Series)**

- Alloy or premium grade carbon steel.
- Through hardened for superior strength, toughness and the ability to withstand high shock loads.

### **COMMON INDUSTRIES**







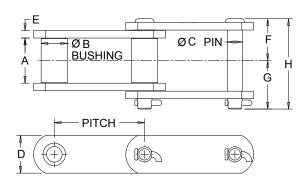


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### WORKHORSE<sup>®</sup> Pony / 5000 Series

# TSUBAKI







					Dimensions								Мах
	Chain Number	Pitch	Attachment Detail	Inside Width	Bushing Diameter	Pin Diameter	Sidebar Height	Sidebar Thick	Pin Head to CL	Pin End to CL	Overall Width	AUS (lbs.)	Working Load
				Α	В	C	D	E	F	G	Н		(lbs.)
SERIES	102B	4.000	See page 7	2.13	1.00	0.63	1.50	0.38	2.00	2.28	4.28	40,000	6,300
Y SEI	111	4.760	See page 9	2.63	1.44	0.75	2.00	0.38	2.28	2.66	4.94	50,000	8,850
PONY	110	6.000	See page 11	2.13	1.25	0.63	1.50	0.38	2.00	2.28	4.28	40,000	6,300
	833	6.000	See page 14	2.63	1.44	0.75	2.00	0.38	2.34	2.66	5.00	74,500	8,850
	856	6.000	See page 16	3.00	1.75	1.00	2.50	0.50	2.78	3.22	6.00	145,000	14,000
s	956	6.000	See page 18	3.00	1.75	1.00	3.00	0.50	2.78	3.22	6.00	160,000	14,000
5000 SERIES	857	6.000	See page 19	3.00	1.75	1.00	3.25	0.50	2.78	3.22	6.00	174,000	14,000
000 S	958	6.000	See page 20	3.00	1.99	1.19	3.38	0.56	2.84	3.28	6.13	206,000	17,000
ũ	859	6.000	See page 21	3.75	2.38	1.25	4.00	0.63	3.41	3.84	7.25	264,000	21,800
	864	7.000	See page 22	3.75	2.38	1.25	4.00	0.63	3.41	3.84	7.25	275,000	22,000
	984	7.000	See page 23	3.75	2.50	1.38	4.00	0.63	3.41	3.84	7.25	285,000	24,000

#### **COMMON UPGRADE OPTIONS:**



Sealed Technology





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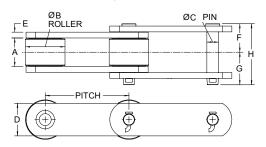
### WORKHORSE® 4000 Series

# TSUBAKI

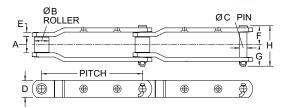




**Straight Sidebar** 



**Offset Sidebar** 



					Dimensions									Max
	Chain Number	Pitch	Sidebar Style	Attachment Detail	lnside Width	Roller Diameter	Pin Diameter	Sidebar Height	Sidebar Thick	Pin Head to CL	Pin End to CL	Overall Width	AUS (lbs.)	Working Load
					А	В	С	D	E	F	G	н		(lbs.)
	4004	9.000	Straight	See page 25	2.63	3.00	1.00	2.50	0.50	2.59	3.03	5.63	121,000	12,700
	4009	9.000	Straight	See page 26	2.19	3.00	0.88	2.50	0.38	2.06	2.44	4.50	143,000	9,000
IES	4035	9.000	Straight	See page 27	3.16	3.50	1.13	3.00	0.50	2.86	3.30	6.16	131,700	16,500
4000 SERIES	4037	9.000	Straight	See page 28	3.25	4.50	1.50	4.00	0.63	3.28	3.72	7.00	340,000	23,600
400	4065	9.000	Straight	See page 29	3.06	4.25	1.25	3.50	0.63	3.06	3.50	6.56	226,000	18,900
	4251	12.000	Offset	See page 30	1.94	1.75	0.88	2.00	0.50	2.25	2.56	4.81	61,200	8,750
	4265	12.000	Straight	See page 31	2.25	3.00	0.88	2.50	0.38	2.16	2.47	4.62	75,500	9,200

#### **COMMON UPGRADE OPTIONS:**



### System Components & Field Services



Sprockets - See Page 36 Traction Wheels - See Page 36 Buckets/Assemblies - See Page 32 Assembly Tools - See Page 37 Backstops - See Page 38

# Improve your operational reliability and productivity with Tsubaki Field Services.

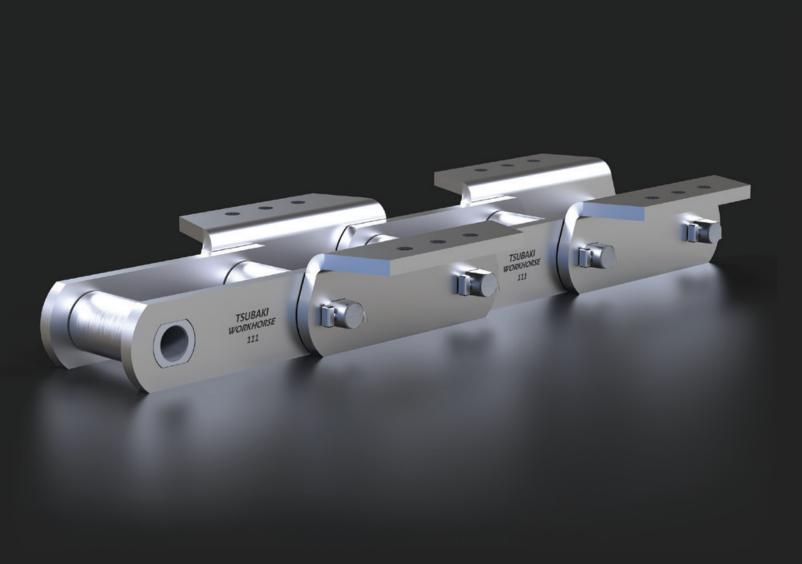
Let our industry-leading team build the ideal chain for your project. We will assess and optimize the chain's performance as your needs change, and proactively assist with its performance throughout its lifecycle.

- Installation Support
- Performance Tracking
- Wear Analysis/Field Inspections
- System Optimization
- Maintenance/Product Training

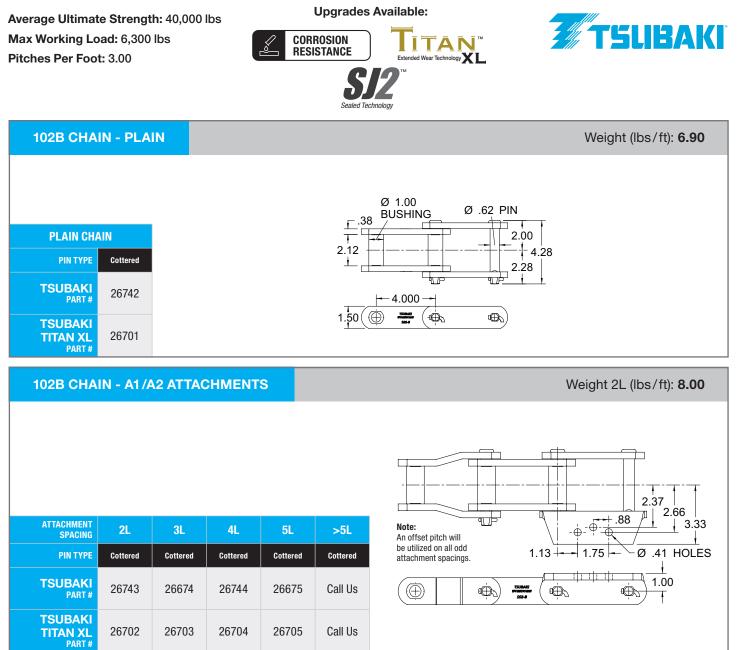


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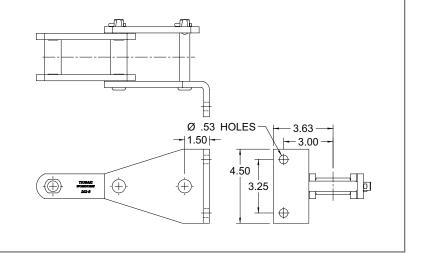


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#### Weight 2L (lbs/ft): 8.30

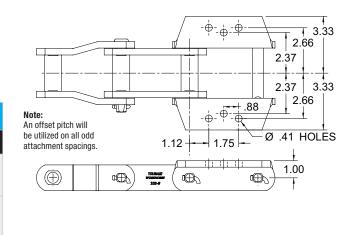
#### **102B CHAIN - G19 ATTACHMENTS**



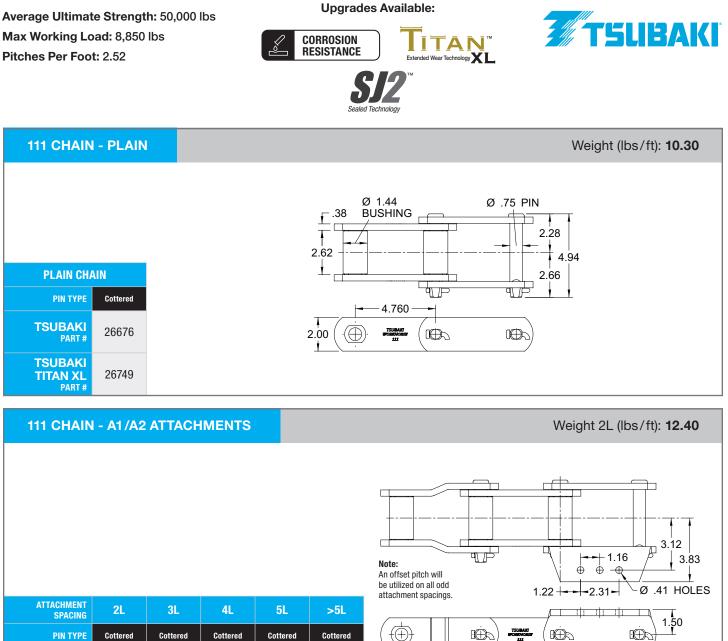
ATTACHMENT Spacing	2	L	4L		
PIN TYPE	Cottered Riveted		Cottered	Riveted	
TSUBAKI PART #	26956	26958	26959	26961	
TSUBAKI TITAN XL PART #	26957	-	26960	-	

**102B CHAIN - K1/K2 ATTACHMENTS** 

### Weight 2L(lbs/ft): 9.00



ATTACHMENT Spacing	2L	3L	4L	5L	>5L
PIN TYPE	Cottered	Cottered	Cottered	Cottered	Cottered
TSUBAKI Part #	26745	26746	26747	26748	Call Us
TSUBAKI TITAN XL PART #	26706	26707	26708	26709	Call Us



444

ATTACHMENT Spacing	2L	3L	4L	5L	>5L
PIN TYPE	Cottered	Cottered	Cottered	Cottered	Cottered
TSUBAKI PART #	26677	26678	26679	26680	Call Us
TSUBAKI TITAN XL PART #	26750	26751	26752	26753	Call Us

**102B / 111 – WORKHORSE® PONY SERIES** 



ATTACHMENT SPACING

**TSUBAKI** 

**TSUBAKI** TITAN XL PART #

10

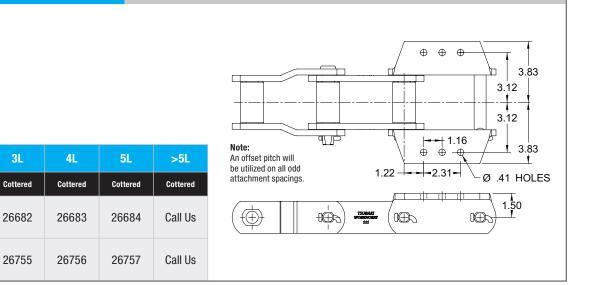
**PIN TYPE** 

PART #

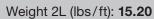
Cottered

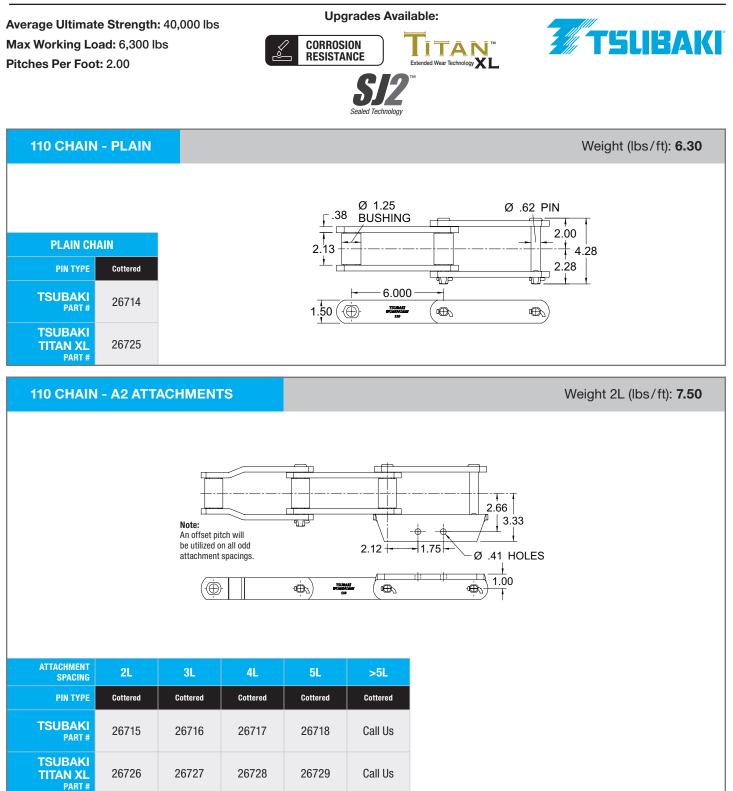
26681

26754



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111 / 110 – WORKHORSE<sup>®</sup> PONY SERIES

Don't see what you need? Call us at 1-800-323-7790 and we will make it!

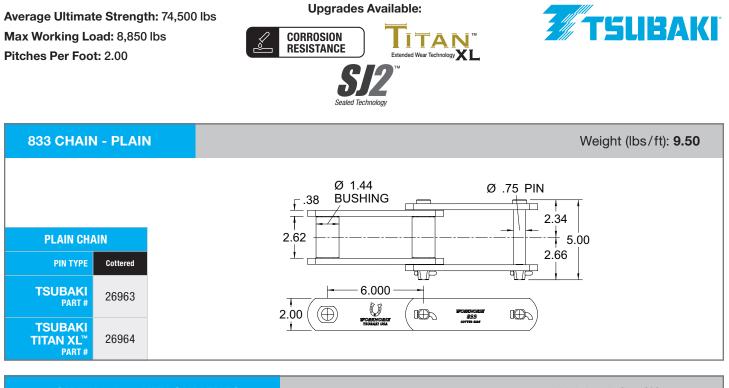
### 110 CHAIN - K2 ATTACHMENTS

		be utilize	t pitch will d on all odd ent spacings.			
ATTACHMENT Spacing	2L	3L	4L	5L	>5L	
PIN TYPE	Cottered	Cottered	Cottered	Cottered	Cottered	
TSUBAKI PART #	26719	26720	26721	26722	Call Us	
TSUBAKI TITAN XL PART #	26730	26731	26732	26733	Call Us	







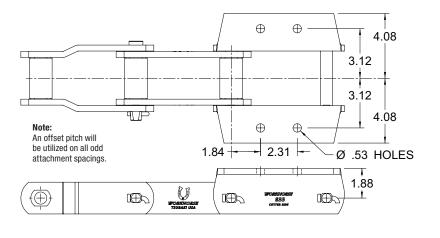


833 CHAIN	I - A24 A	TTACHN	IENTS	Weight 2L (lbs/ft): <b>11.50</b>
ATTACHMENT Spacing	2L	3L	OTHER	An offset pitch will be utilized on all odd 1.84 - 2.31 - Ø .53 HOLES
PIN TYPE	Cottered	Cottered	Cottered	attachment spacings.
TSUBAKI PART #	26965	26967	Call Us	
TSUBAKI TITAN XL <sup>™</sup> PART #	26966	26968	Call Us	

833 – WORKHORSE<sup>®</sup> 5000 SERIES

#### Weight 2L lbs/ft): 14.00





ATTACHMENT Spacing	2L	3L	OTHER
PIN TYPE	Cottered	Cottered	Cottered
TSUBAKI PART #	23998	26970	Call Us
TSUBAKI TITAN XL <sup>™</sup> PART #	26969	26971	Call Us



4.86

4.86

Ø .75 HOLES

1.88

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3.62

3.62

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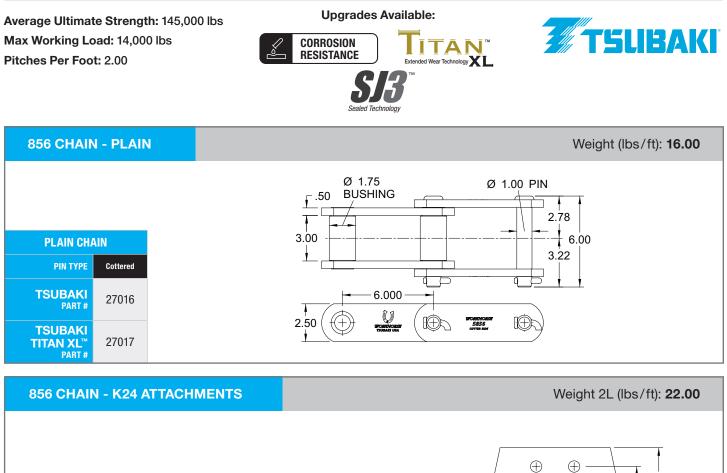
1.75 - 2.50

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5856

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An offset pitch will

be utilized on all odd attachment spacings.

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Note:

ATTACHMENT SPACING

**TSUBAKI** 

**TSUBAKI** 

TITAN XL

**PIN TYPE** 

PART #

PART #

2L

Cottered

26876

27020

3L

Cottered

27021

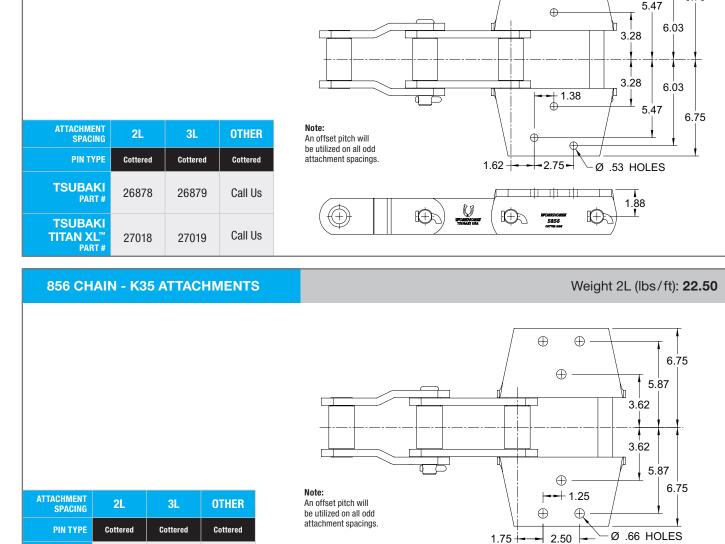
27022

**OTHER** 

Cottered

Call Us

Call Us



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#### 856 CHAIN - K3 ATTACHMENTS

**TSUBAKI** 

**TSUBAKI** 

TITAN XL

PART #

PART #

26877

27023

27024

27025

Call Us

Call Us

### Weight 2L (lbs/ft): 20.00

1.88

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5856

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6.75

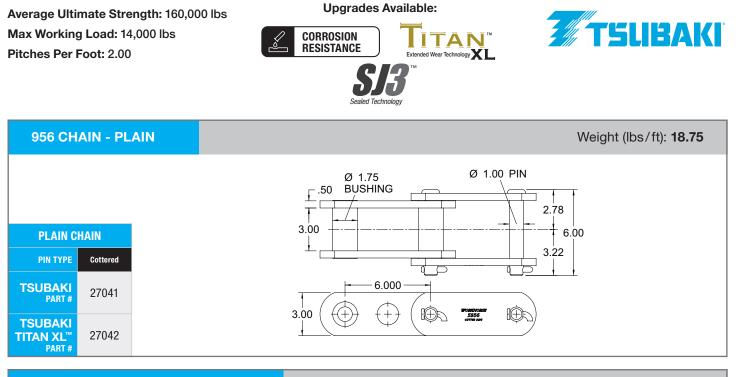
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856 - WORKHORSE® 5000 SERIES

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#### 956 CHAIN - K24 ATTACHMENTS

ATTACHMENT

**TSUBAKI** 

TSUBAKI

TITAN XL"

SPACING

**PIN TYPE** 

PART #

PART #

2L

Cottered

26883

27043

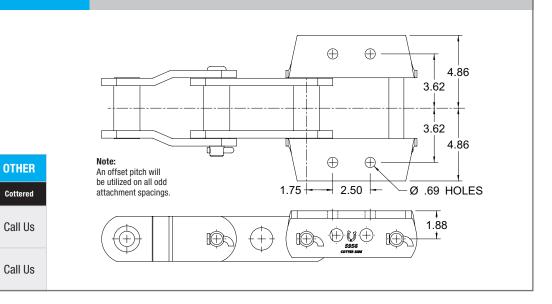
3L

Cottered

27044

27045

Weight 2L (lbs/ft): 48.00



Average Ultimate Strength: 174,000 lbs Max Working Load: 14,000 lbs Pitches Per Foot: 2.00



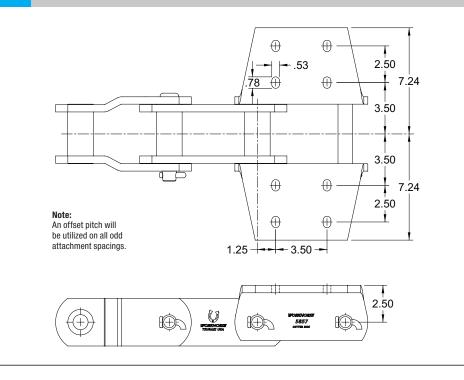




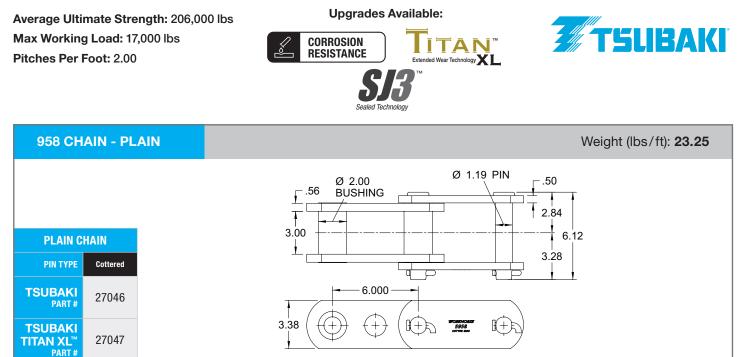
#### 857 CHAIN - PLAIN Weight (lbs/ft): 21.25 Ø 1.75 BUSHING Ø 1.00 PIN .50 2.78 Т 3.00 6.00 **PLAIN CHAIN** 1 3.22 PIN TYPE Cottered n 6.000 **TSUBAKI** 27026 PART # Ø Ð 3.25 (+)5857 ⊕ TORMOR **TSUBAKI** 27027 TITAN XL" PART #

### 857 CHAIN - K44 ATTACHMENTS

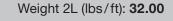
### Weight 2L (lbs/ft): 31.00

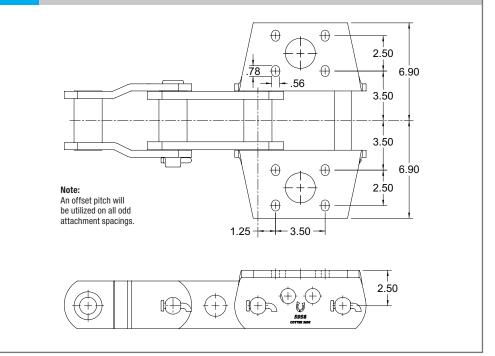


ATTACHMENT Spacing	2L	3L	OTHER
PIN TYPE	Cottered	Cottered	Cottered
TSUBAKI PART #	26880	27029	Call Us
TSUBAKI TITAN XL <sup>™</sup> PART #	27028	27030	Call Us



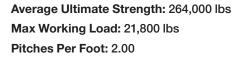
OFO O	HAIN -		TTAA	<b>FNITC</b>
958 U	- FAIN -	N44 A		ENIS





ATTACHMENT Spacing	2L	3L	OTHER
PIN TYPE	Cottered	Cottered	Cottered
TSUBAKI PART #	26884	27048	Call Us
TSUBAKI TITAN XL <sup>™</sup> PART #	26885	27049	Call Us

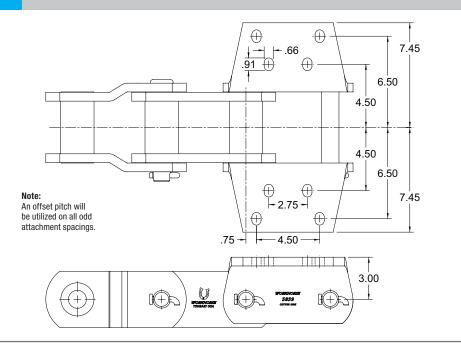




### **Upgrades Available:** CORROSION ITAN™ Inded Wear TechnologyXL RESISTANCE

#### 859 CHAIN - PLAIN Weight (lbs/ft): 36.50 Ø 2.37 BUSHING Ø 1.25 PIN 3.41 7.25 3.75 3.84 **PLAIN CHAIN** PIN TYPE Cottered 6.000 **TSUBAKI** 27031 PART # Ð 4.00 5859 +**TSUBAKI** 27032 TITAN XL" PART #

Weight 2L (lbs/ft): 48.00

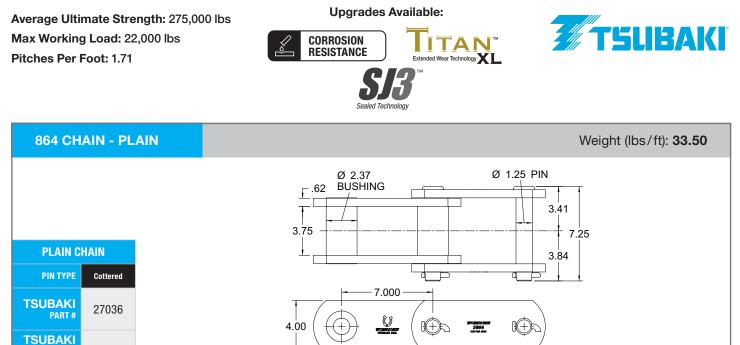


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### **859 CHAIN - K44 ATTACHMENTS**

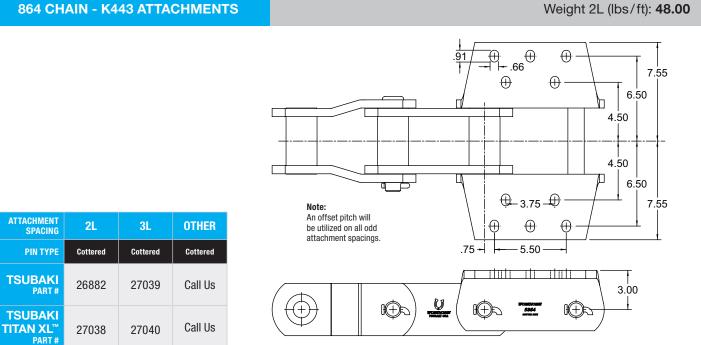
ATTACHMENT Spacing	2L	3L	OTHER
PIN TYPE	Cottered	Cottered	Cottered
TSUBAKI PART #	26881	27034	Call Us
TSUBAKI TITAN XL <sup>™</sup> PART #	27033	27035	Call Us

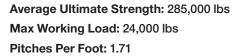


### 864 CHAIN - K443 ATTACHMENTS

27037

TITAN XL<sup>™</sup> PART #





984 CHAIN - K443 ATTACHMENTS

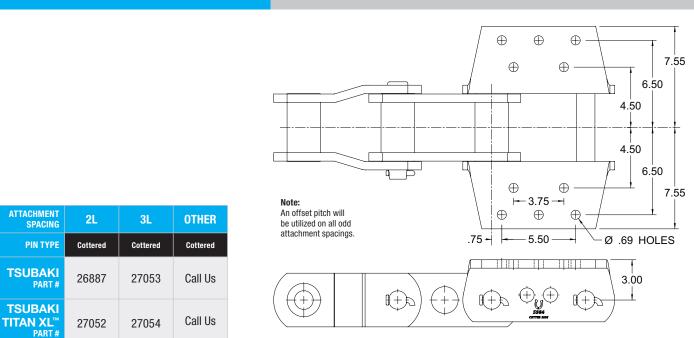






#### 984 CHAIN - PLAIN Weight (lbs/ft): 33.50 Ø 2.50 Ø 1.38 PIN BUSHING .62 3.41 3.75 7.25 1 3.84 **PLAIN CHAIN PIN TYPE** Cottered 7.000 **TSUBAKI** 27050 PART # (+)> 4.00 +5984 **TSUBAKI** 27051 TITAN XL PART #

Weight 2L (lbs/ft): 44.80



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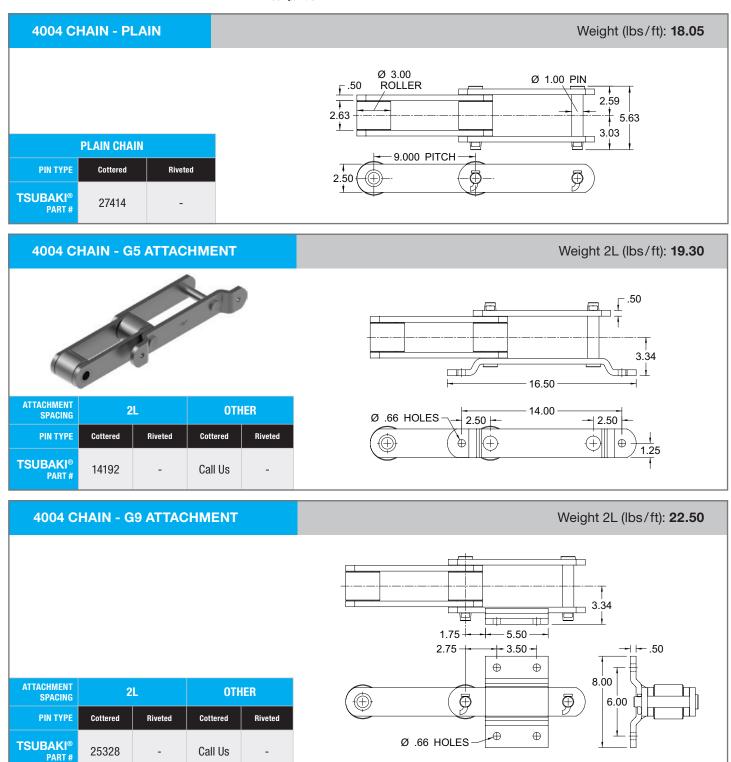




Average Ultimate Strength: 121,000 lbs Max Working Load: 12,700 lbs Pitches Per Foot: 1.33 Upgrades Available:







Riveted Construction available upon request.

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Average Ultimate Strength: 143,000 lbs Max Working Load: 9,000 lbs Pitches Per Foot: 1.33

4009 CHAIN - G5 ATTACHMENT

Upgrades Available:



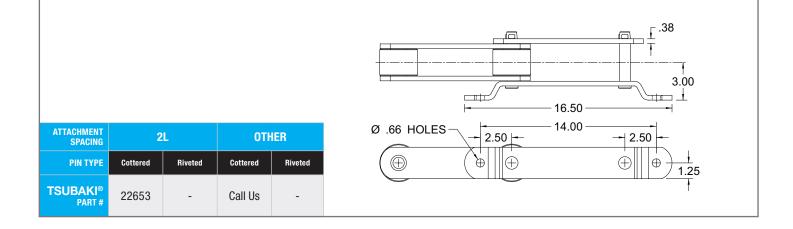


Weight 2L (lbs/ft): 15.00





#### 4009 CHAIN - PLAIN Weight (lbs/ft): 13.98 Ø 3.00 Ø .88 PIN .38 ROLLER 2.06 2.19 4.50 2.44 To 9.000 PITCH **PLAIN CHAIN** ∮ ∮ 2.50 **PIN TYPE** Cottered Riveted **TSUBAKI®** 27415 PART #



Riveted Construction available upon request.

Average Ultimate Strength: 131,700 lbs Max Working Load: 16,500 lbs Pitches Per Foot: 1.33

**Upgrades Available:** 



# **TSUBAKI**

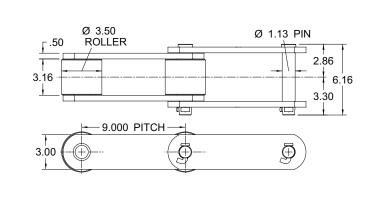
Weight (lbs/ft): 24.83





### 4035 CHAIN - PLAIN

PLAIN CHAIN				
	PLAIN CHAIN			
PIN TYPE	PLAIN CHAIN Cottered	Riveted		



### **4035 CHAIN - G5 ATTACHMENT**

2L

Riveted

-

Cottered

27417

**OTHER** 

Riveted

\_

Cottered

Call Us

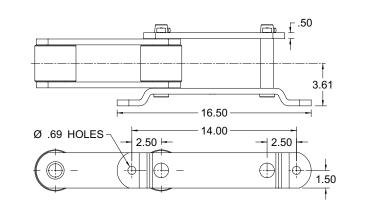
ATTACHMENT SPACING

**TSUBAKI®** 

**PIN TYPE** 

PART #

### Weight 2L (lbs/ft): 26.32



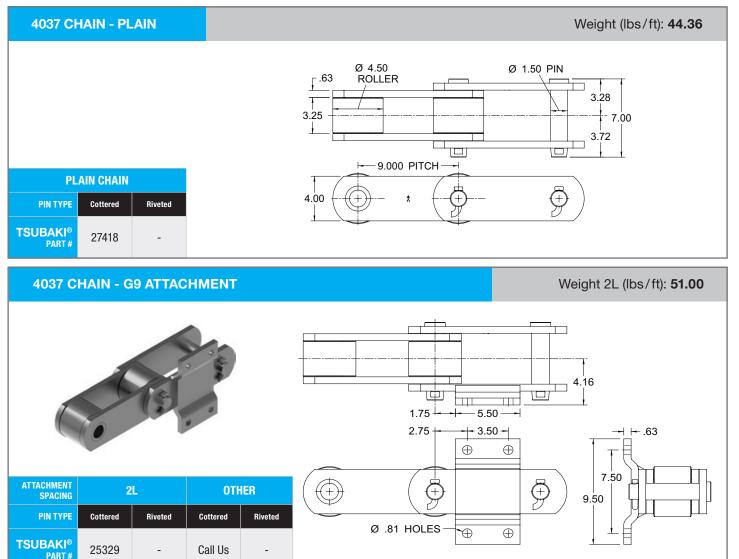
Average Ultimate Strength: 340,000 lbs Max Working Load: 23,600 lbs Pitches Per Foot: 1.33

#### **Upgrades Available:**









Riveted Construction available upon request.

4065 CHAIN - PLAIN

Average Ultimate Strength: 226,000 lbs Max Working Load: 18,900 lbs

Pitches Per Foot: 1.33





Ø 4.25

ROLLER

9.000 PITCH

₿

.63

3.06

ł

3.50

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Weight (lbs/ft): 37.00

3.06

3.50

6.56



**4065 CHAIN - G5 ATTACHMENT** 

Riveted

**PLAIN CHAIN** 

Cottered

23440

PIN TYPE

PART #

**TSUBAKI®** 

ATTACHMENT

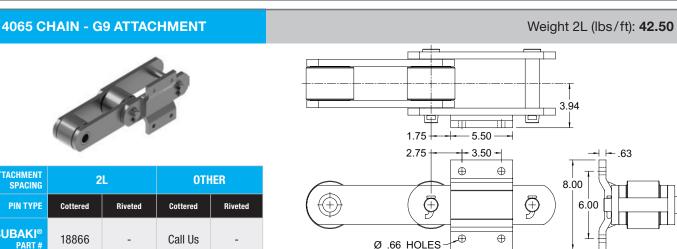
**TSUBAKI®** 

SPACING

PIN TYPE

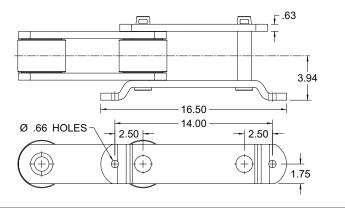
PART #

ATTACHMENT SPACING **2L** OTHER **PIN TYPE** Cottered Riveted Cottered Riveted **TSUBAKI®** 18818 Call Us PART #



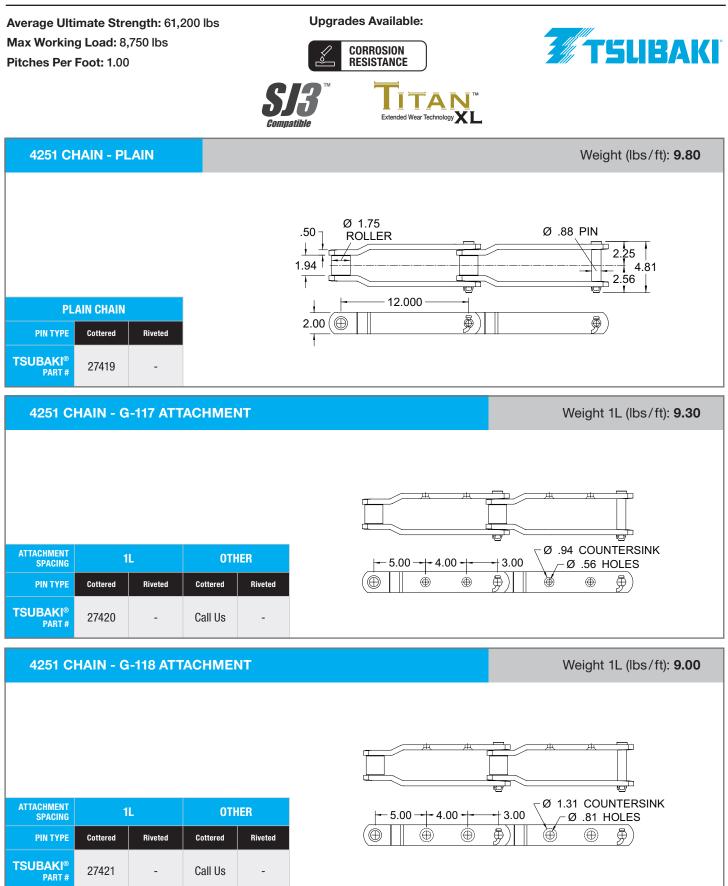
Riveted Construction available upon request.

Weight 2L (lbs/ft): 38.80



Ø 1.25 PIN

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Riveted Construction available upon request.

**TSUBAKI** 

Average Ultimate Strength: 75,500 lbs Max Working Load: 9,200 lbs

**Pitches Per Foot: 1.00** 

**Upgrades Available:** 

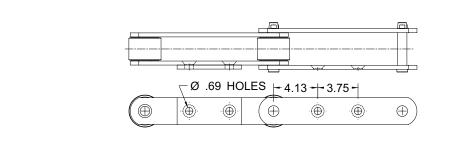


### 4265 CHAIN - PLAIN

Weight 1L (lbs/ft): 12.10 Ø 3.00 Ø .88 PIN .38 ROLLER 2.16 4.63 2 2.47 To -12.000 PITCH \_ **PLAIN CHAIN** ∮ ∮ 2.50  $\oplus$ **PIN TYPE** Cottered Riveted **TSUBAKI®** 27422 PART #

### 4265 CHAIN - G6 ATTACHMENT

Weight 1L (lbs/ft): 12.00



ATTACHMENT Spacing	1L		2L		OTHER	
PIN TYPE	Cottered	Riveted	Cottered	Riveted	Cottered	Riveted
TSUBAKI® PART #	27423	-	27424	-	Call Us	-

Riveted Construction available upon request.

# **Buckets & Bucket Assemblies**

#### **PREMIUM TSUBAKI® BUCKETS**

- Tsubaki maintains a market leading portfolio of cast, fabricated and polymeric buckets
- Standard and full custom designs available to fit virtually any OEM system.
- Metallic buckets typically produced in Carbon Steel, Stainless Steel, AR or Ductile Iron
- Polymer buckets are available in Nylon, Urethane, Polyethylene or FDA Nylon
- Full design and engineering resources are available to assist with proper selection, issue resolution and potential optimization/ enhancement.

#### **TSUBAKI® CHAIN AND BUCKET ASSEMBLIES**

- Tsubaki will securely fasten buckets to the chain at the factory to assure proper fit and in turn save installation time and money in the field.
- Assemblies typically ship in 10 foot, palletized strands, but custom options/packaging available upon request.



#### **TYPICAL APPLICATIONS**

- Bucket Elevators
- Incline Elevators/Conveyors





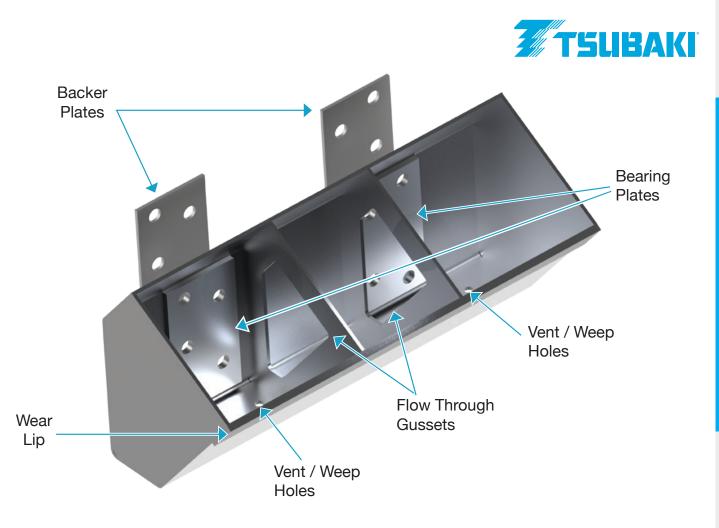


**COMMON INDUSTRIES** 

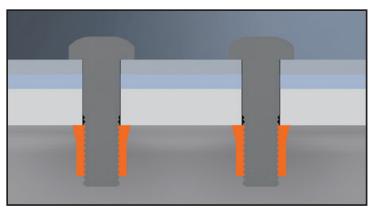




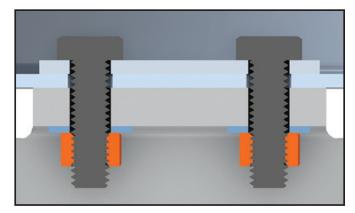
### **Basic Anatomy / Upgraded Options**



### **Bucket Fastening Options**



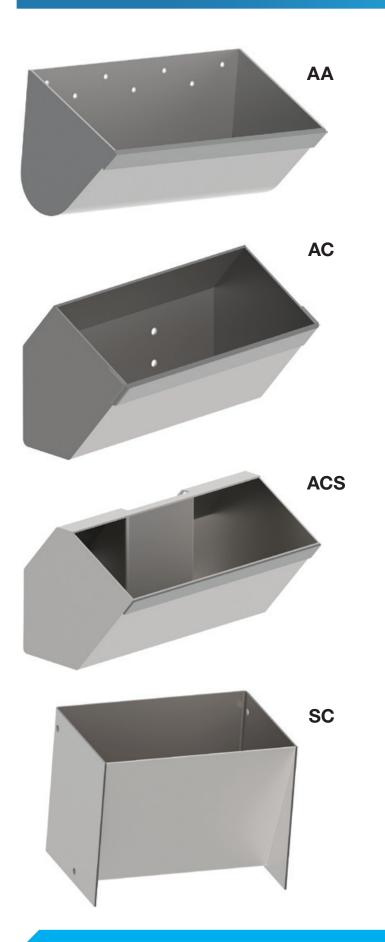
**Huck Hardware Configuration** 



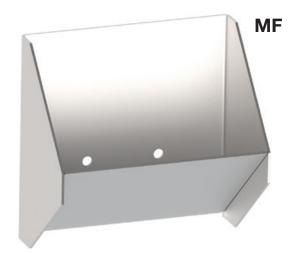
### **Standard Hardware Configuration**

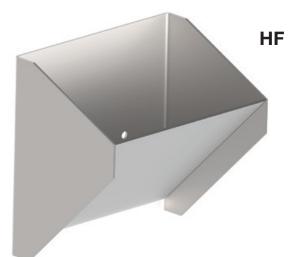
BUCKET ANATOMY

### **Standard Bucket Designs**

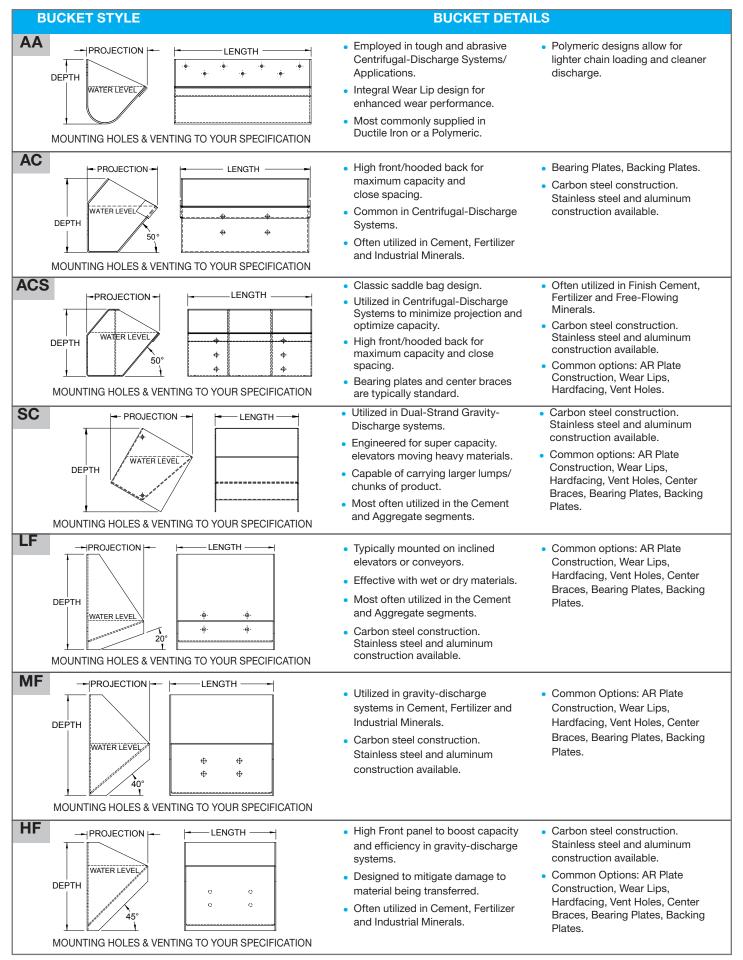












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### WORKHORSE®

# **Sprockets & Traction Wheels**

WORKHORSE® TRACTION WHEELS						
Part Number	Chain Number	Diameter	Number of Segments	Hub Body Number	Bolts	Plate Thickness
WKT-56/57/58-26-20	856, 857, 956, 958	26	3	20	24	2.75
WKT-56/57/58-30-20	856, 857, 956, 958	30	3	20	24	2.75
WKT-56/57/58-36-30	856, 857, 956, 958	36	6	30	24	2.75
WKT-56/57/58-42-35	856, 857, 956, 958	42	6	35	24	2.75
WKT-59-26-20	859	26	3	20	24	3.44
WKT-59/64/84-30-20	859, 864, 984	30	4	20	24	3.44
WKT-59/64/84-36-30	859, 864, 984	36	6	30	24	3.44
WKT-59/64/84-42-35	859, 864, 984	42	6	35	24	3.44
WKT-59/64/84-49-35	859, 864, 984	49	6	35	24	3.44

Part Number	Chain Number	Number of Teeth	Number of Segments	Hub Body Number	Bolts	Plate Thickness
WKSP-56/57-13-16	856, 857, 956	13	3	16	12	2.75
WKSP-56/57-15-16	856, 857, 956	15	3	16	12	2.75
WKSP-56/57-15-20	856, 857, 956	15	3	20	24	2.75
WKSP-56/57-17-25	856, 857, 956	17	3	25	24	2.75
WKSP-56/57-19-25	856, 857, 956	19	3	25	24	2.75
WKSP-58-15-20	958	15	3	20	24	2.75
WKSP-59-13-16	859	13	3	16	12	3.44
WKSP-59-15-20	859	15	3	20	24	3.44
WKSP-64-13-16	864	13	3	16	24	3.44
WKSP-64-15-25	864	15	3	25	24	3.44
WKSP-64-19-25	864	19	3	25	24	3.44
WKSP-84-13-16	984	13	3	16	12	3.44
WKSP-84-15-25	984	15	3	25	24	3.44
WKSP-84-19-25	984	19	3	25	24	3.44



# **Assembly/Disassembly Tools**

### CUSTOM CHAIN ASSEMBLY & DISASSEMBLY TOOLS FROM TSUBAKI®

- High interference press fits are absolutely critical to WORKHORSE<sup>®</sup> chain performance and longevity.
- Tsubaki assembly/disassembly tools allow for quick, effective and safe field management of high interference press fits.
- Most units are tailored to a specific chain design or need, but standard more universal models are also readily available.
- All units are relatively ergonomic, easy to use and designed to withstand harsh industrial use/environments.
- Please contact us for assistance with tool sizing, selection and availability.



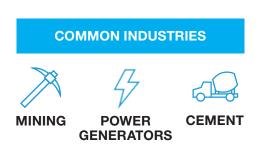


# **BS-F Series Backstops**

Tsubaki's new BS-F Series backstops are designed for simple, drop-in installation to all major competitive backstop products. These backstops use a unique seal design for maximum life with minimal maintenance. With Tsubaki's innovative design features, our backstops ensure efficient and dependable operation in the harshest environments.

#### **TYPICAL APPLICATIONS**

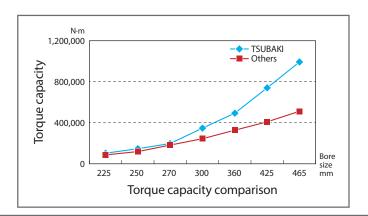
- Mining (Coal, Copper, Potash) used in inclined conveyors and bucket elevators for transporting raw materials.
- Power Generating Plants that rely on inclined conveyors to transfer coal from the stockpile to the boiler rooms.
- Cement Plants used in bucket elevators and inclined conveyors for moving limestone and clay to crushers and silos.



#### **INNOVATIVE FEATURES:**

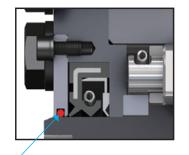
#### **NON-ROLLOVER CAM**

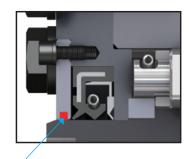
- Provides higher torque ratings than the leading competitors due to the larger profile and greater contact area.
- Improves performance and prevents costly and potentially dangerous rollover.



#### SPECIAL LABYRINTH SEAL

- New seal design prevents the ingress of dust and other contaminants typically found in mining and cement plants, which extends the life of the lubricant.
- Minimizes heat generation and provides trouble-free service with minimal scheduled maintenance.





Flexible Labyrinth

Grease Only



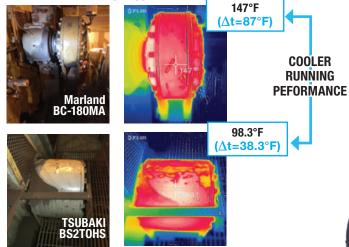
### Superior Performance in the Harshest Environments



### **GREASE LUBRICATION**

- Offers synthetic grease lubrication in a sealed backstop design.
- Breather element is eliminated.
- No need to monitor oil levels, refill the backstop or worry about moisture in the lubricant.
- Provides maintenance-free and trouble-free performance.

#### AMBIENT TEMPERATURE 60°F



Cam



### **DROP IN DESIGN**

- Tsubaki offers the narrowest backstop with an I-beam torque arm.
- Quick and easy field replacement. Drop in compatible with most competitive products.

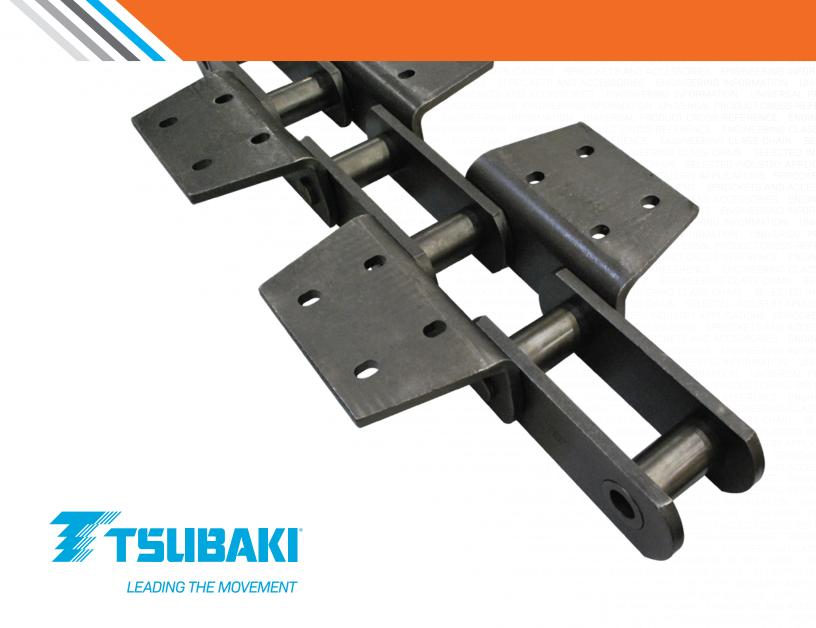
**BS-F SERIES BACKSTOPS** 



Step Ease connections the like of like the lock pins through flange plate and secure torque arm. Step 3: Insert retaining pins into tork pins

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Roller Chain Division 821 Main St. Holyoke, MA 01040 Tel: 800.323.7790



Conveyor & Construction Chain Division 1010 Edgewater Drive Sandusky, OH 44870 Tel: 800.537.6140



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Cable & Hose Carrier Division 7100 W. Marcia Road Milwaukee, WI 53223 Tel: 800.443.4216

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