

# Drop Forged Conveyor Chains



# Advantages of En-Masse Conveying and Drop Forged Chain

The En-Masse conveyor with the drop-forged chain in a skeletal shape provides one of the tightest conveyor configurations on the market. This type of conveyor chain excels at moving fine powder or granular matter on any angle. These conveyors allow you to change angles or go vertical and horizontal in the same conveyor whereas other styles of chains and belts require two conveyors. There are many features to this type of conveyor, including a totally enclosed design that has easily replaceable wear components and is gas and water tight. These conveyors are assembled and made to order, allowing I'ANCO to address your unique application concerns.

This particular chain is designed to move highly abrasive fine matter, En-Masse. It is also designed to be lightweight and extremely hard, thus reducing horsepower per ton of material conveyed ratio. Due to its small bearing surface from pin-to-barrel and horizontal-wear areas, this style of chain operates best with relatively low loads and low speed. Material conveyed will be limited to relatively low volume or density over a relatively long distance. This type of chain and conveyor excels in ash, slash, grain and lime dust to name a few.



## High Temperature Applications

I'ANCO is able to supply this chain in a full range of materials for high temperature applications. We offer the standard and heavy 142mm chain as well as the 260-mm in a cast form for specialty steels. The standard case-hardened alloy steel these chains are manufactured in are sensitive to prolonged exposure to temperatures above 300F. The effectiveness of the case-hardened surface steadily declines as it approaches 600F, where upon the case hardness is lost and the core hardness of the material begins to reduce. When this material has prolonged exposure at 900F, the hardness will drop below 30 HRC. If we look at a tool steel, such as the H13, it will achieve 56 HRC and retain this hardness at temperatures up to 950F. If we were to approach a temperature of 1800 F, we would consider a heavier chain design using a HN stainless steel. This stainless steel has a very low hardness 160-240BHN. However, HN stainless steel has excellent resistance to creep rupture failures and sigma phase embrittlement. Through I'ANCO's process, an alloy can be created specifically for your application.

### En-Masse Benefits:

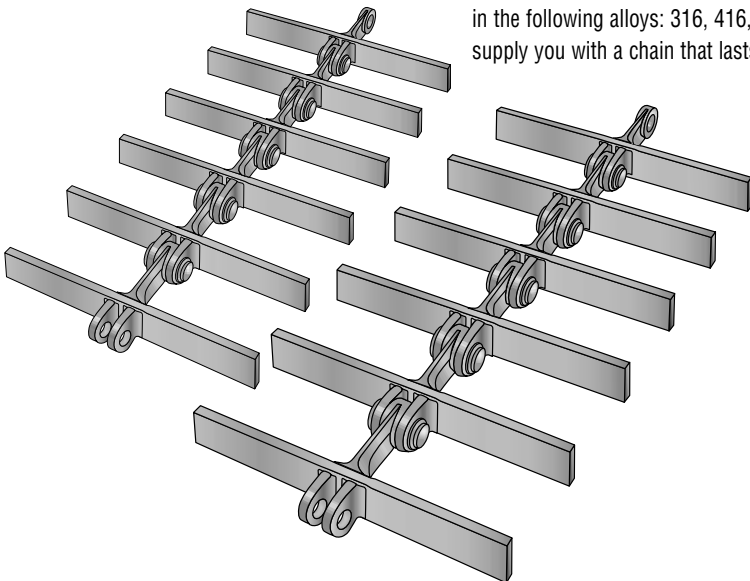
- Totally enclosed and safe design
- Highest conveying efficiency
- Lower horsepower needs
- Combination of conveying directions
- High capacities over large distances
- Reduced structural supports
- Minimal degradation of production
- Able to handle extremely hostile products
- Dust and weather tight
- Dual direction conveying

### The Results:

- No additional safety equipment needed
- Best in smallest area vs. capacity
- Only belt conveying is better
- Only pneumatic conveying is better
- Only pneumatic conveying is better
- Best in reduced product contact
- Best at abrasive, high temperatures
- No additional equipment needed
- Allows for multiple discharge points

## Options

Standard chains are offered with various flight designs and materials. Though the standard material for flights is mild steel, many alloys are available, including stainless steel and synthetics. *Standard flight information can be found on page four.* All these chains are offered with 316 stainless steel or mild steel clamp washers, depending on the corrosive nature of the matter being conveyed. We also offer these chains with stainless steel or tool steel pins in the following alloys: 316, 416, 17-4PH, H13, 310, or 2205. All of these options give I'ANCO the flexibility to supply you with a chain that lasts in the unique aspects of your application.



*With 60 years of experience, I'ANCO manufactures quality, cost-effective products. Our extensive selection of job-specific products are in stock for your convenience.*

## Technical Data



l'ANCO's common series chains are a forged and machined product with case-hardened heat treatment. The links are supplied as low alloy steel with the following typical properties: 0.040" case depth, 60HRC surface hardness, and 300-400 BHN-core hardness. The physical tolerances on this product are tighter than most other manufacturers. This ensures the correct pitch and force loads as well as the prevention of premature failure. All of l'ANCO's specifications meet or exceed all other manufactures of this chain. Due to the high hardness of these products, they are excellent where abrasion-resistance is required. If impact or misalignment is a factor l'ANCO manufactures chains to meet these needs. l'ANCO puts all of our products through a rigorous quality assurance system to ensure you receive the best chain possible. l'ANCO also calculates its

$$\frac{\text{Actual BHP}^* \times 33,000}{\text{Chain speed (FPM)}} = \text{Actual working load}$$

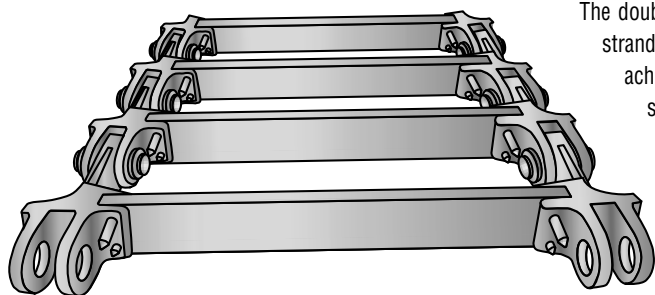
working load with a safety factor of 5.5:1 from the ultimate strength of the chain. When designing a new conveyor, the motor should be sized so that it does not exceed 2.5 times the working load of the chain under overload conditions.

\*do not use installed motor size

## Common and Double Series Chain

Chain Series	Ultimate Strength	Working Load	Weight	Link Height	Link Width	Male-End Thickness	Body Thickness	Hole Diameter	Attachment Width	Centerline to Outer Lug	Centerline to Attachment Edge	Recommended Sprocket Type
142 STD	73,000 Lbs 33,180 kg	13,000 Lbs 5,910 kg	2.45 Lbs 1.11 kg	1.97" 50mm	1.65" 42mm	.75" 19mm	.47" 12mm	.98" 25mm	-	-	-	Symmetrical
142 HVY	99,000 Lbs 45,000 kg	18,000 Lbs 8,182 kg	3.74 Lbs 1.7 kg	1.97" 50mm	2.44" 62mm	1.14" 29mm	.63" 16mm	.98" 25mm	-	-	-	Symmetrical
260 STD	150,000 Lbs 68,180 kg	27,270 Lbs 12,390 kg	14.0 Lbs 6.4 kg	2.95" 75mm	2.76" 70mm	1.18" 30mm	.79" 20mm	1.26" 32mm	-	-	-	Non-Symmetrical
142 STD/DBL	73,000 Lbs 33,180 kg	13,000 Lbs 5,910 kg	3.41 Lbs 1.55 kg	1.97" 50mm	1.65" 42mm	.75" 19mm	.47" 12mm	.98" 25mm	3.11" 79mm	1.30" 33mm	1.41" 35mm	Non-Symmetrical

## Double Series Flights



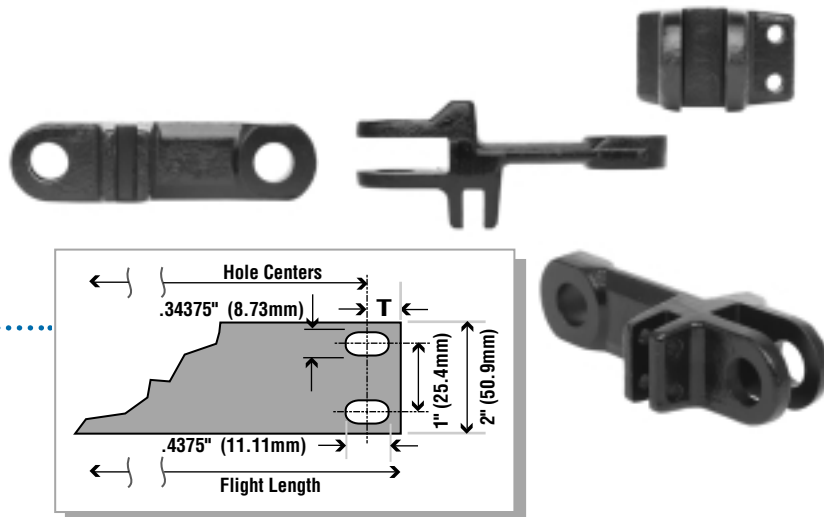
The double series flights require some movement; this is to ensure that the forces applied to both strands of chain do not cause misalignment or bending moments on the chain. This flexibility is achieved through slotted holes in the flights and a slight tolerance in the holding knuckle to allow some differential stretch between the two chains. For optimum performance of a double-stranded chain, please ensure that the chains are loaded in the center, thus evenly applying the load. If possible, periodically flip the chain. This will help compensate for any wear differential. Ultimately, l'ANCO recommends that this flight be used only on distribution conveyors (bunker/hopper filling), where the benefits of this flight style outweigh the detriments.

## Flight Calculation Constants

Chain Style	Z	Q	S	T
142 STD/DBL	2.60" 66mm	4.39" 111mm	1.06" 26.8mm	.53" 13.4mm
142 HVY/DBL	3.38" 86mm	5.95" 151mm	.87" 22mm	.43" 11mm

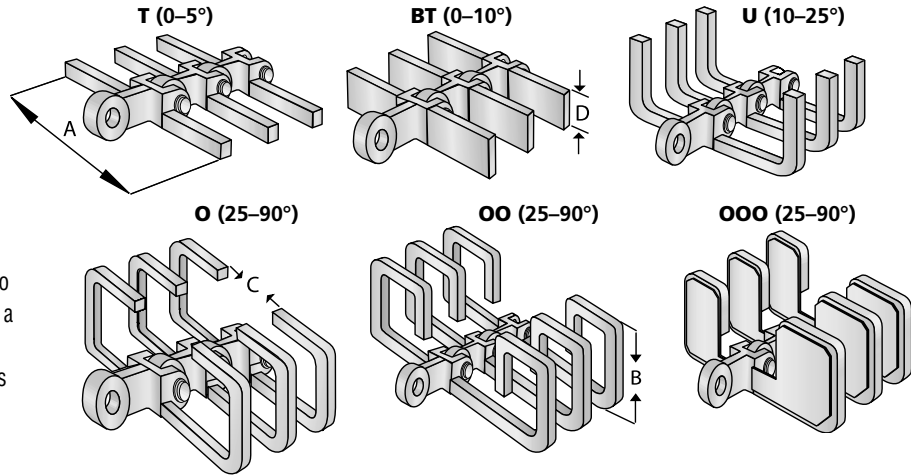
### To Calculate

- Sprocket Centers:** Subtract **Z** from the overall chain width
- Flight Length:** Subtract **Q** from the overall chain width
- Hole Centers:** Subtract **S** from the overall flight length



# Flight Types

The flight types shown in the illustrations are some of the most common configurations found in the market place. In addition, l'ANCO manufactures a full range of custom flight styles to meet your needs. Flight selection is based on the material being conveyed and the incline of the conveyor. Listed beside each illustration is the typical incline the flight style operates within. The finer the material being conveyed, the more frequent the flight spacing needs to be. The same rule holds true as the incline increases, but in addition, the surface area and height of the flight need to increase in order to prevent roll back. These flights are all welded to the case-hardened link; therefore, the welding should be preformed only in a controlled environment with pre- and post-heat conditions. The flights are typically supplied in mild steel but are also available in a variety of materials and hardnesses to address your specific needs.

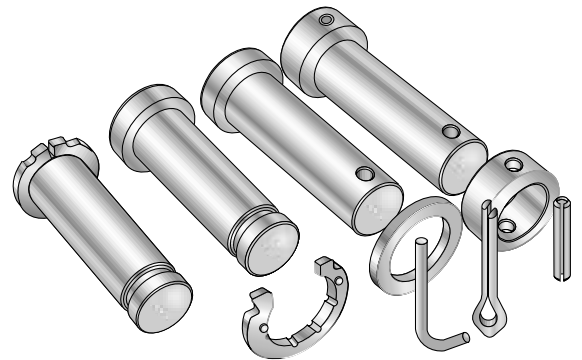


## 142 Standard Series Flights

Conveyor Size	A	B	C	D	Weight (Flight Only)					
					T	BT	U	O	OO	OOO
11"	10.94"	5.88"	4.75"	2.00"	1.41 Lbs	2.36 Lbs	3.10 Lbs	3.62 Lbs	4.40 Lbs	5.62 Lbs
280mm	278mm	149.5mm	120.7mm	50mm	.64 kg	1.07 kg	1.41 kg	1.65 kg	2.0 kg	2.55 kg
15"	14.88"	7.56"	5.50"	2.00"	2.04 Lbs	3.41 Lbs	4.30 Lbs	5.45 Lbs	6.80 Lbs	9.38 Lbs
380mm	378mm	192mm	139.7mm	50mm	.93 kg	1.55 kg	1.95 kg	2.48 kg	3.09 kg	4.26 kg
19"	18.81"	10.0"	6.25"	2.00"	2.72 Lbs	4.45 Lbs	5.65 Lbs	7.16 Lbs	9.27 Lbs	14.07 Lbs
480mm	478mm	254mm	158.7mm	50mm	1.24 kg	2.02 kg	2.59 kg	3.25 kg	4.21 kg	6.40 kg
25"	24.69"	10.0"	6.25"	2.00"	3.60 Lbs	6.01 Lbs	6.60 Lbs	9.07 Lbs	11.25 Lbs	18.19 Lbs
635mm	627mm	254mm	158.7mm	50mm	1.64 kg	2.73 kg	3.0 kg	4.12 kg	5.11 kg	8.27 kg
30"	29.81"	10.0"	6.25"	2.00"	4.43 Lbs	7.39 Lbs	7.44 Lbs	10.66 Lbs	12.90 Lbs	21.67 Lbs
762mm	757.2mm	254mm	158mm	50mm	2.01 kg	3.36 kg	3.38 kg	4.85 kg	5.86 kg	9.85 kg

## Bolt Types

l'ANCO's chain pins (bolts) are made from low alloy steel and are case hardened. The core hardness of the pin is typically 300-400 BHN with an outer surface hardness of 62HRC for an effective depth of 0.030"-0.040". At your request, l'ANCO can supply clamp washers in mild steel or stainless steel. We can also offer pins in martinsitic or precipitation hardened alloys such as AISI420 and 17-4PH stainless steel. Stainless steel bolts and clamp washers should be considered in any wet ash or hogfuel applications.



### 142 Standard Series

Bolt Type	Overall Width	Distance Between Grooves	Groove Width	Color Thickness	Spring Pin	Bolt Diam.	Bolt Weight Diam. (N)
A	2.56"	1.77"	.197"	-	-	.984"	.492 Lbs
	65mm	45mm	5mm	-	-	25mm	.224 kg
B	2.48"	1.77"	.197"	-	-	.984"	.567 Lbs
	63mm	45mm	5mm	-	-	25mm	.258 kg
C	2.68"	1.77"	.157"	.591"	.236"	.984"	.624 Lbs
	68mm	45mm	4mm	15mm	6mm	25mm	.284 kg
D	2.953"	1.77"	-	.591"	.236"	.984"	.592 Lbs
	75mm	45mm	-	15mm	6mm	25mm	.269 kg

### 142 Heavy Series

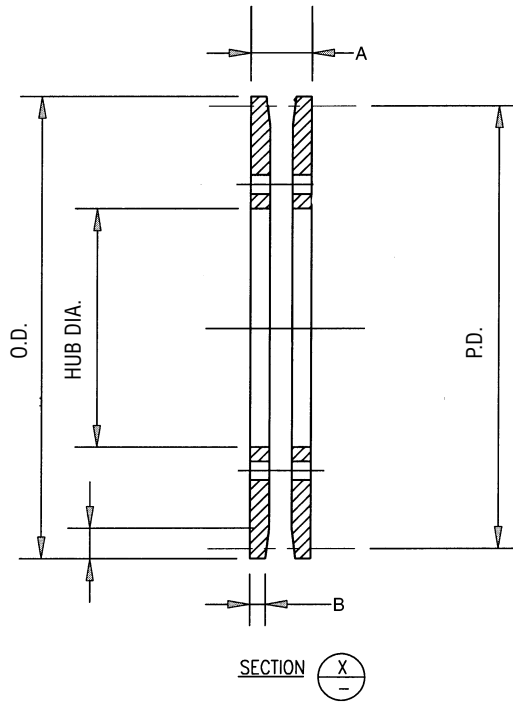
A	3.35"	2.56"	.197"	-	-	.984"	.656"
	85mm	65mm	5mm	-	-	25mm	.298mm
B	3.27"	2.56"	.197"	-	-	.984"	.740"
	83mm	65mm	5mm	-	-	25mm	.336mm
C	3.465"	2.56"	.157"	.591"	.236"	.984"	.785"
	88mm	65mm	4mm	15mm	6mm	25mm	.357mm
D	3.74"	2.56"	-	.591"	.236"	.984"	.770"
	95mm	65mm	-	15mm	6mm	25mm	.350mm

### 260 STD Series

D	4.41"	2.95"	.728"	.394"	1.26"	1.44"
	112mm	75mm	18.5mm	10mm	32mm	.656mm

#### Bolt Types:

- A:** The most widely used bolt; fastened using one clampwasher at each end.
- B:** Features an integral head (\*8mm) at one end and a clampwasher groove at the other.
- C:** Features an integral head (\*8mm) at one end and uses a flat washer/cotter/"S" pin or collar/spring pin combination on the other.
- D:** (Ring Bolt) This is secured using one collar and spring pin at each end.



l'ANCO produces sprocket "A" plates from abrasion-resistant plate and post-heat treatment to l'ANCO's desired hardness of a typical 450BHN. l'ANCO can also manufacture these sprockets in stainless steel for corrosive application upon request. We machine, face and spigot to ensure a correct pitch design and minimal runout. This helps prevent misalignment.

l'ANCO also manufactures the "A" plate in symmetrical and non-symmetrical tooth profiles for extra life and for your convenience. The 142MM standard and heavy-double series are unavailable in symmetrical profiles. When an attachment is present, it may interfere with the symmetrical tooth design. All of l'ANCO's sprocket plates come in four piece designs and the symmetrical sprockets can be flipped for additional service.

### Custom Sprocket Components:

- A:** Replacement sprocket tooth plates
- B:** 6-piece split hub kit
- C:** 2-piece split hub kit

*With 60 years of experience, l'ANCO manufactures quality, cost-effective products. Our extensive selection of job-specific products are in stock for your convenience.*

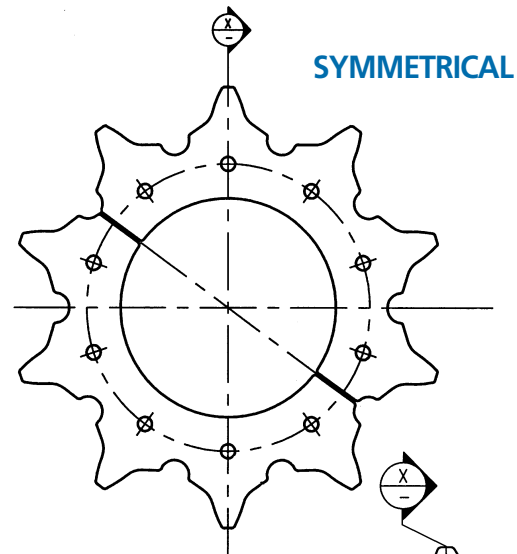


## 142 Standard Series SYMMETRICAL "A" Plates

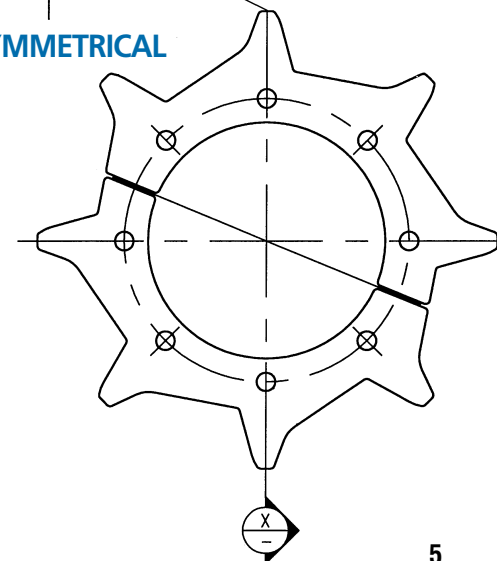
Tooth/Bolt	P.D.	O.D.	Chain O.D.	A	B
6TS/6B	11.18"	11.8"	13.25"	1.97"	.67"
	284mm	300mm	337mm	50mm	17mm
7TS/7B	12.88"	13.5"	15.0"	1.97"	.67"
	327mm	343mm	381mm	50mm	17mm
8TS/8B	14.6"	15.25"	16.69"	1.97"	.67"
	371mm	387mm	424mm	50mm	17mm
9TS/9B	16.35"	17.0"	18.43"	1.97"	.67"
	415mm	432mm	468mm	50mm	17mm
10TS/10B	18.09"	19.25"	20.19"	1.97"	.67"
	459mm	489mm	513mm	50mm	17mm
11TS/11B	19.84"	21.06"	21.94"	1.97"	.67"
	504mm	535mm	557mm	50mm	17mm
4TS/14B	25.12"	26.37"	27.24"	1.97"	.67"
	638mm	670mm	692mm	50mm	17mm

## 142 Heavy Series SYMMETRICAL "A" Plates

7TS/7B	12.88"	13.5"	15.0"	2.75"	.75"
	327mm	343mm	381mm	70mm	19.05mm
8TS/8B	14.6"	15.25"	16.69"	2.75"	.75"
	371mm	387mm	424mm	70mm	19.05mm
9TS/9B	16.35"	17.0"	18.43"	2.75"	.75"
	415mm	432mm	468mm	70mm	19.05mm
10TS/10B	18.09"	19.25"	20.19"	2.75"	.75"
	459mm	489mm	513mm	70mm	19.05mm
11TS/11B	19.84"	21.06"	21.94"	2.75"	.75"
	504mm	535mm	557mm	70mm	19.05mm
14TS/14B	25.12"	26.37"	27.24"	2.75"	.75"
	638mm	670mm	692mm	70mm	19.05mm

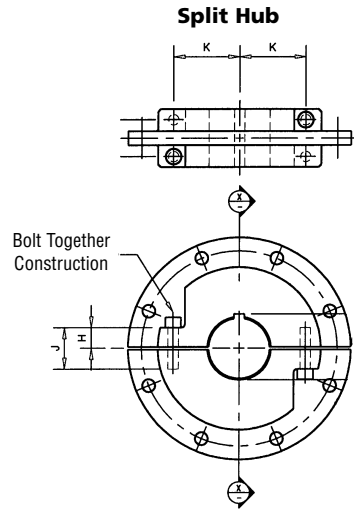
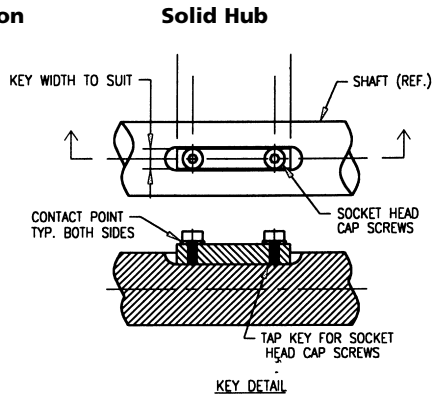
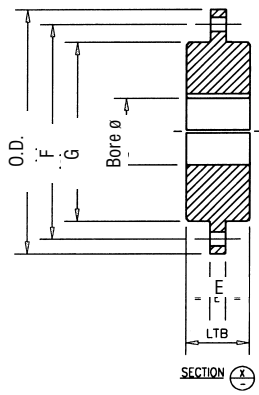


NON-SYMMETRICAL



# Solid and Split Hubs

## Solid & Split Hub Cross-Section



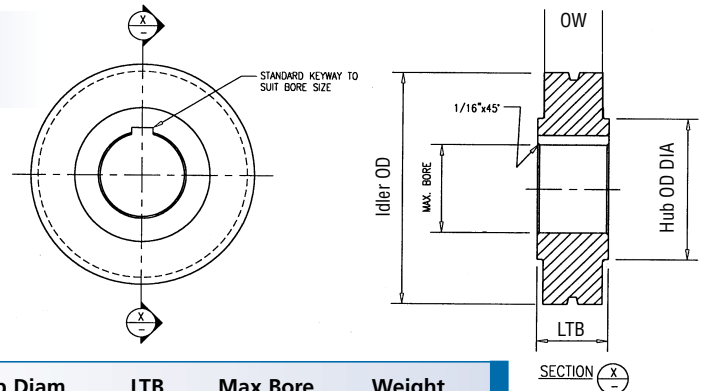
At I'ANCO, we manufacture three Hub styles:

1. Standard sliding fit hub with a threaded and extended key to lock the hub in place.
2. Split hub, as seen in the illustration.
3. Six piece split hubs will accommodate the need for split hubs when space does not allow standard configurations.
4. Other sizes available upon request.

## 142mm Solid and Split Hub Series

Description	O.D.	LTB	Max Bore	Key Type	E	F	G	H	J	K
7 Bolt STD	9.25"	2.75"	2.94"	Square	0.67"	7.5"	5.88"	0.75"	2"	2.19"
8 Bolt STD	10.75"	2.75"	4.94"	Square	0.67"	9.45"	7.87"	1"	2"	3.19"
9 Bolt STD	12.25"	2.75"	4.94"	Square	0.67"	9.45"	7.87"	1"	2"	3.19"
10 Bolt STD	14.25"	2.75"	5.94"	Square	0.67"	12.5"	9.5"	1"	2"	4"
7 Bolt HVY	9.25"	3.54"	2.94"	Square	0.75"	7.5"	5.88"	0.75"	2"	2.19"
8 Bolt HVY	10.75"	3.54"	4.94"	Square	0.75"	9.45"	7.87"	1"	2"	3.19"
9 Bolt HVY	12.25"	3.54"	4.94"	Square	0.75"	9.45"	7.87"	1"	2"	3.19"
10 Bolt HVY	14.25"	3.54"	5.94"	Square	0.75"	12.5"	9.5"	1"	2"	4"

## Idlers



## 142mm Standard Series SOLID IDLER

Idler Size	Idler O.D.	P.D.	Chain O.D.	Outside Width	Hub Diam.	LTB	Max Bore	Weight
289	11.375"	14.49"	16.61"	1.97"	7.08"	2.75"	3.94"	63 lbs
	289mm	368mm	422mm	50mm	200mm	70mm	100mm	28.6 kg
321	12.625"	15.63"	17.76"	1.97"	7.08"	2.75"	3.94"	75 lbs
	321mm	397mm	451mm	50mm	200mm	70mm	100mm	34.1 kg
345	13.58"	16.54"	18.66"	1.97"	9.45"	3.15"	6.50"	100 lbs
	345mm	420mm	474mm	50mm	200mm	70mm	165mm	45.5 kg
437	17.20"	19.96"	22.09"	1.97"	9.45"	3.15"	6.50"	150 lbs
	437mm	507mm	561mm	50mm	241mm	70mm	165mm	68.2 kg
557	21.93"	24.53"	26.65"	1.97"	8.0"	4.0"	6.50"	245 lbs
	557mm	623mm	677mm	50mm	279mm	80mm	165mm	111.4 kg

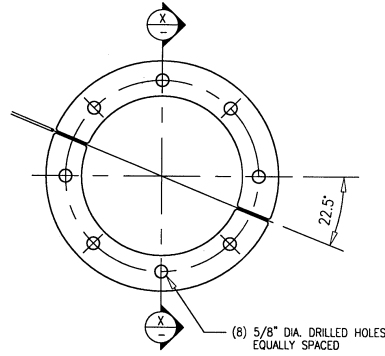
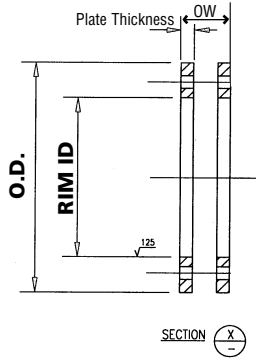
## 142mm Heavy Series SOLID IDLER

289 SR	11.375"	14.49"	16.61"	2.75"	7.87"	2.75"	3.94"	75 lbs
	289mm	368mm	422mm	70mm	200mm	70mm	100mm	34.1 kg
321 SR	12.625"	15.63"	17.76"	2.75"	7.87"	2.75"	3.94"	95 lbs
	321mm	397mm	451mm	70mm	200mm	70mm	100mm	43.2 kg
345 SR	13.58"	16.54"	18.66"	2.75"	7.87"	2.75"	6.50"	110 lbs
	345mm	420mm	474mm	70mm	200mm	70mm	165mm	50 kg
437 SR	17.20"	19.96"	22.09"	2.75"	9.45"	2.75"	6.50"	185 lbs
	437mm	507mm	561mm	70mm	241mm	70mm	165mm	84.1 kg
557 SR	21.93"	24.53"	26.65"	2.75"	8.0"	3.15"	6.50"	305 lbs
	557mm	623mm	677mm	70mm	279mm	80mm	165mm	138.6 kg

## 142mm Standard and Heavy Series SPLIT IDLER RIMS

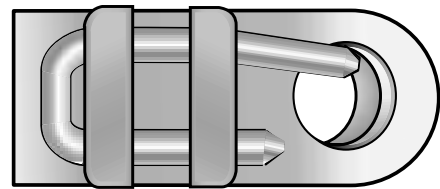
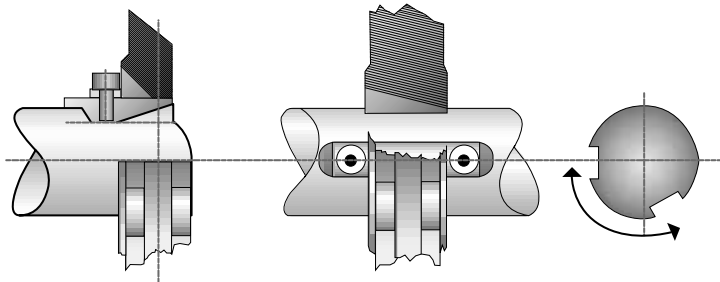
Idler Size	Idler O.D.	PD	Chain O.D.	Outside Width Std	Outside Width Hvy	RIM ID	Plate Thick Std	Plate Thick Hvy
289 SR	11.375"	14.49"	16.61"	1.97"	2.75"	7.87"	.67"	.75"
	289mm	368mm	422mm	50mm	70mm	200mm	17mm	19mm
321 SR	12.625"	15.63"	17.76"	1.97"	2.75"	7.87"	.67"	.75"
	321mm	397mm	451mm	50mm	70mm	200mm	17mm	19mm
557 SR	21.93"	24.53"	26.65"	1.97"	2.75"	11.02"	.67"	.75"
	557mm	623mm	677mm	50mm	70mm	280mm	17mm	19mm

### Split Idler



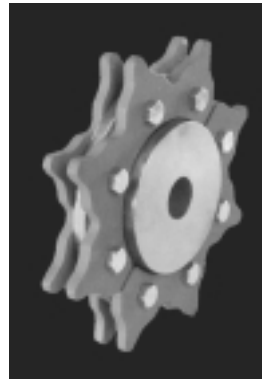
Note: For use with Split & Solid Hubs

## Installation



### U-Pins

To install, ensure that the open end is pointed away from the direction of travel. Bend the longer leg down approximately 20 degrees. Over or under bending may cause the pin to walk out and release the flight, causing damage to the chain.



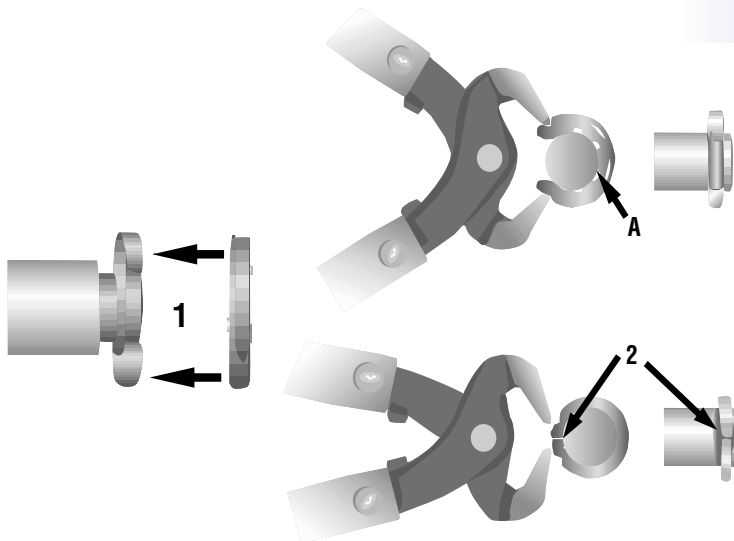
### Sprockets

The sprockets should be aligned perpendicular to the chain. On the standard hub styles, the key configuration is specially designed to ensure that the sprocket does not have lateral movement. Lateral movement can cause misalignment and ultimately lead to failure. To prevent this from occurring the sprocket and the bearings must be fixed.

## Fastening Clamp Washers

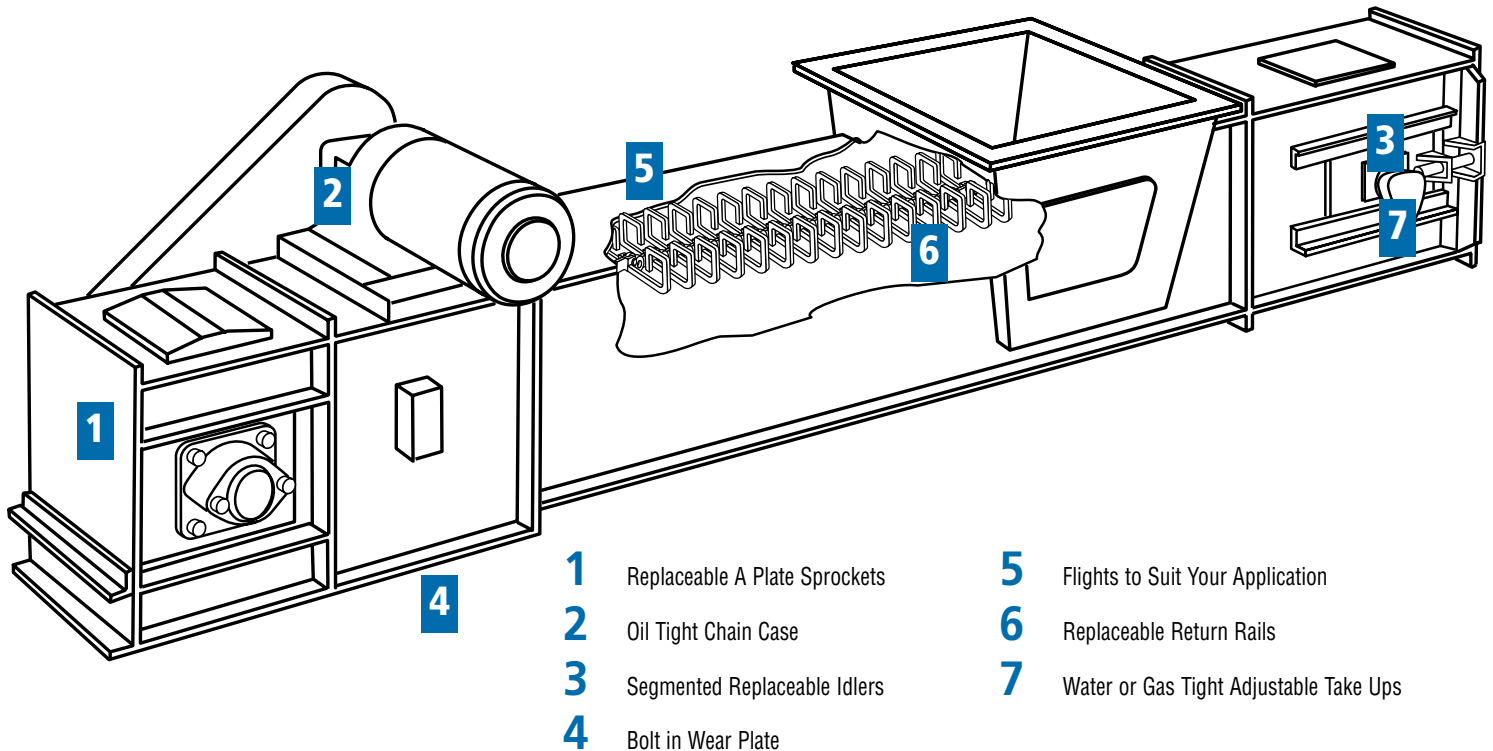
### The Fastening Tool

For manually fastening clampwasher, the best tool to use is a standard 8-12" cutting nipper that has 18-24" tube extensions for increased leverage. This tool is available from I'ANCO.



## En-masse Conveyors

These conveyors are designed with maintenance in mind. All parts are bolted together for easy replacement when needed. I'ANCO will review your application and make recommendations specific to your individual problems and potential problems. I'ANCO's experience as a problem solver in many operations enables us to predict and prevent your potential difficulties. At I'ANCO, we continually enhance and improve our products to be the best for each application. We manufacture our conveyors from abrasion-resistant material, stainless steel or whatever your application requires.



I'ANCO PRODUCTS LTD. specializes in the design, manufacture, and sale of heavy-duty, severe-service conveyor chains and sprockets. I'ANCO has an extensive background in heavy-duty, severe-service materials handling for conveyor applications. The flagship of our product line is austenitic manganese steel chains and sprockets.

I'ANCO PRODUCTS LTD. also manufactures a complete line of logging rigging for our customers in the forest harvesting industry. I'ANCO logging fittings have an established track record for strength, durability, and reliability, based on strict in-house quality control procedures and process testing at every stage of our manufacturing process. At I'ANCO we carry a large selection of parts and fittings for virtually every logging application. Using high-grade cast alloy steel, we work closely with our customers to develop new ideas and improve our existing product lines.

Our head office as well as our two primary operating facilities are located in Surrey, BC. Our design, assembly, and storage facilities are also located in Surrey. I'ANCO PRODUCTS LTD. works closely with Highland Foundry to develop and produce our cast products.

**For more information and a copy of our full catalogue of products, contact:**

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