brooks

World Class Precision Engineering

HIGH PERFORMANCE PIN OVEN CHAIN

INTRODUCTION

Brooks are the world's leading authority on the manufacture and supply of high performance pin oven chains to the Beverage Can Industry. Complimenting the chains is a range of precision sprockets for the oven, pre-dry and chain return, single sided chain guide and electrostatic lubricators.

Brooks was founded in 1973 and has been involved within the two piece can industry ever since. The Company Headquarters and main manufacturing site are located in Manchester, England. The North America sales and main warehousing facility are located in Denver, Colorado and recently a second warehouse was established in Charlotte, NC.

PIN OVEN CHAIN

Brooks pin oven chain is manufactured in 21ft/6.4m lengths. Each chain starts and finishes with a 3 pitch section and is supplied with a spring clip connecting link. Pins are located every 7th pitch as standard (other pitch spacings are available) and each length contains 48 fully assembled pins. Pins are assembled with spring loaded PEEK tips.

Pre-lubrication is critical to ensure maximum chain life. Brooks chains are submerged in an oil bath for 1 hour to ensure the oil penetrates the pin bush cavity. Excess lubrication on the outside of the chain is removed by centrifuge. Extended pin alignment is checked on every 21ft length to ensure accurate loading and unloading of the beverage can is achieved.

FIXED PIN

Integral pin oven chain

This chain is riveted throughout, including the extended pin, and is widely regarded as offering the longest chain life of all standard integral chains.

Optima pin oven chain

Optima pin oven chains benefit from an elevated surface hardness of approximately 50% compared to our standard chain. The chain bush is also modified to accommodate the improved bearing pin. These changes produce a chain of exceptional quality, offering excellent results with reduced lubrication.

Lube free pin oven chain

Sintered bush technology allows our lube free chains to run 'dry' with zero operational lube providing a totally clean operating system.

FIXED PIN

X-ring pin oven chain

Our X-ring chains are similar to o-ring chains in they keep the pre-lube inside the chain whilst keeping contamination out of the chain. The X shape of the seals creates less friction between the chain link plates producing a greater service life and due to their unique shape, they have two additional sealing surfaces to a traditional o-ring.

REPLACEABLE PIN

Hollow pin oven chain

Lock nuts developed to aerospace industry standards secure the pins in the chain yet allow quick and easy replacement whenever necessary.

BESPOKE DESIGNS

Dual pin oven chain

Specially designed to suit dual can transfer units giving the benefit of doubling can production for any given chain speed. Chains are assembled with small diameter tips to aid can transfer and a central cone to aid can stability.

Special hollow pin

Brooks can offer any pin spacing to suit all customer requirements.

TECHNICAL

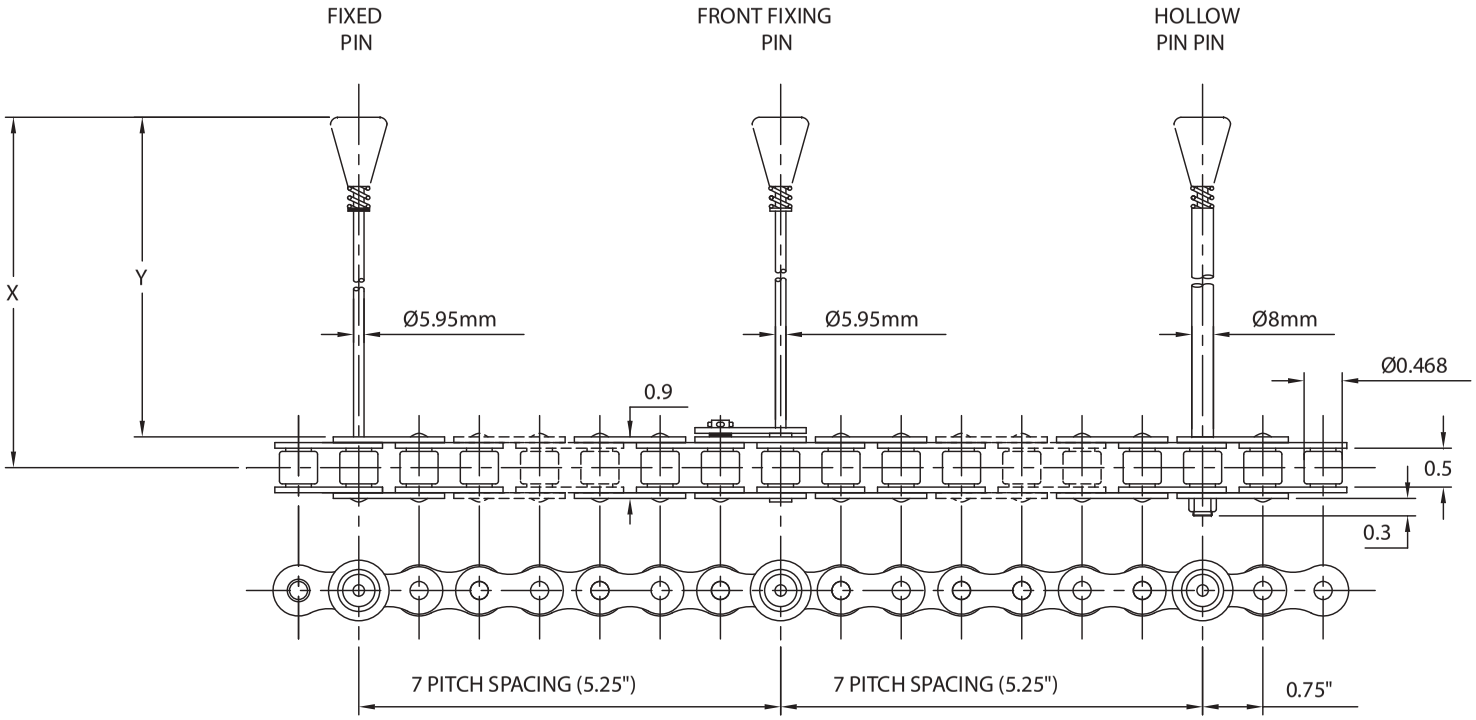
Our chains are:

- Pre-lubricated with H1 food grade lubricant then centrifugally spun to remove the excess
- Solid roller and solid bush
- High waisted link plate shape to give better stress distribution
- Components manufactured to the highest specifications for unbeatable accuracy
- End-softened pins for easy disassembly
- Unbeatable wear and fatigue resistance
- Longer consistent working life
- Reduced bedding-in times
- Better resistance to shock loadings

DIMENSION IN INCHES UNLESS STATED

CENTRE-LINE TO END OF TIP: X =

SIDE PLATE TO END OF TIP: Y =



Alt No.	Date	Grid	Alteration	GENERAL TOLERANCES mm(") 0.0 ± 0.25mm (±0.010") 0.00 ± 0.1mm (±0.004") 0.000 ± 0.025mm (±0.001") ALL OTHER DIMENSIONS ±0.5mm (0.020") UNLESS STATED	SURFACE FINISH 32 µm CLA WHERE APPLICABLE OTHER VALUES ARE SHOWN ABOVE SYMBOL IN MICRONS	MATL	VARIOUS	Brooks	CHECKED BY	SGC 30.01.14
						HT	-		DRAWN BY	SGC 30.01.14
						SCALE	NONE	THREE STANDARD PIN CHAIN OPTIONS	POC-?	

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TECHNICAL SPECIFICATION

Brooks High Performance Pin Oven Chains:

Base Chain:

¾″ pitch ASA60 simplex chain, fully assembled with an extended pin/hollow pin every 7th pitch (5.25″).

Chain manufactured in 21ft lengths (6.4m, 336 x 0.75 pitches). Each length supplied with a spring clip connector.

Dimensions:

Pitch:	19.05mm (¾″)
Inside width:	12.57mm min
Bearing pin dia:	5.94mm
Bearing pin length:	25.3mm
Roller dia:	11.91mm
Extended pin dia:	5.94mm (fixed pin and front fixing chain), 8mm (hollow pin chain)

Pins:

Pins manufactured from special heat treated alloy steel for our fixed pin chains and hardened carbon steel for our hollow pin chains are manufactured to suit customer specifications.

Tips:

Each extended pin will be fitted with a spring-loaded conical tip manufactured from PEEK. Tips will be seated on springs and retained by fixing collars. Special designs are available. Please contact Brooks for further information.

Lubrication:

Individual 21ft lengths pre-lubricated with a high temperature, high viscosity H1 synthetic oil.

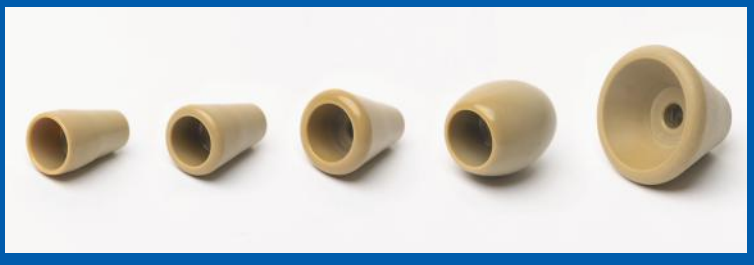
Packing details:

Individual 21ft lengths placed in plastic bags then packed in cardboard boxes. Cardboard boxes are packed in treated wooden shipping cases for sea freight to international customers.

TIP OPTIONS

We offer 5 sizes of tips to suit all can sizes. 16.4mm dia. 'flat' tip, 18mm dia. 'small' tip, 21.5mm dia. 'standard' tip, 35mm dia. 'large' tip and our unique 24mm dia. 'barrel' tip.

Our standard range of tips are manufactured from PEEK using the latest in high temperature moulding techniques and with a melting point of 343°C, PEEK is the most suitable material for modern high speed can lines. Dual tip options are also available to aid can stability.

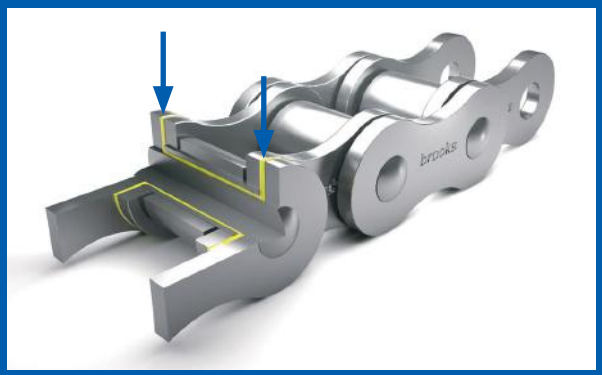


LUBRICATION

To maximise pin chain life a good quality lubricant must penetrate the chain to form a barrier between the chain bearing pin and bush. Not only does the oil need to prevent the metal to metal contact between the pin and bush under high load conditions it needs to withstand high temperatures, have low residue formation and conform to H1 NSF regulations.

Large volume, low frequency application is not the correct way to lubricate pin chains. This leads to high residue formation, oil fling contamination and poor transfer efficiencies. To reduce the volume of oil applied to the chain, atomisation lubricators were introduced but these systems still caused needless contamination, specifically airborne contamination, and high Metal Exposure readings. Brooks, together with their technical partners, have developed Electrostatic Lubrication for pin oven chains. Working on the principle of 'opposites attract', a negative charge is applied to the lubricant as it flows from the lubricator nozzles causing a jet of oil to be attracted to the chain like a magnet. Once the lubricant hits the chain, the negatively charged oil particles disperse into the chain, direct to the bearing surfaces.

Typical application setting is one full chain revolution on – two revolutions off. Lubricator nozzles need to be set between 20mm - 25mm above the chain and positioned so that oil is applied to the lubrication path between the inner and outer links plates.



ASSOCIATED PRODUCTS

Air Blade

To increase lubrication efficiency Brooks has developed the Air Blade which applies a low-pressure jet of air over the lubrication gap of the pin chain. This has three advantages:

1: it keeps the lubrication gap clean and clear of contamination.

2: it improves the flow of oil to the bearing pin/bush housing.

3: it reduces surface lubricant to help reduce can and line contamination.

Chain Wear Gauges

The Brooks chain wear gauge is a quick and easy method to check chain wear. Simply place the 'C' end onto a chain roller and then bring the dimensioned arm into the chain The numbers on the arm represent 'percentage' chain wear with the intermediate gradations representing a further 0.5%. Chain replacement should be considered at 2% wear.

Adjustable Chain Guides

Installed on alternate sides of vertical runs and above and below on horizontal runs, Brooks single sided chain guides are designed to reduce chain and can contamination. They are easy to install, easy to maintain, easy to adjust and easy to clean.

Precision Sprockets

Brooks manufacture sprockets from certified ground plate and strict tolerances are applied to flatness, concentricity, tooth profile and pitch. Tooth hardness is achieved by 'tooth by tooth' induction hardening or tooth 'flame hardening'.

PIN CHAIN MAINTENANCE

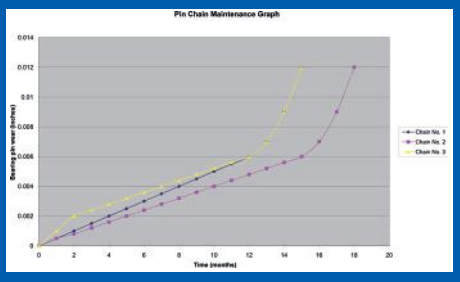
Chain life is dependent on bearing pin wear. Bearing pin wear occurs when the surface of the pin rubs against the surface of the bush causing the pin to wear and the chain to 'stretch'.

Factors affecting bearing pin wear:

- Poor quality lubricant
- Poor application of lubricant
- Not enough lubricant being applied to the chain
- Sprocket misalignment
- Chain contamination
- Prolonged period of stationary time in the oven

All of the above can be identified and action taken if the 'Brooks Preventative Maintenance Program' (BPMP) is implemented. Please contact Brooks for further information.

BPMP CHAIN LIFE GRAPH



BPMP TROUBLE SHOOTER

No lubricant on bearing pins:	Increase volume & or frequency of lubrication Check lubricator is working Check nozzles are clear and in correct position Check chain contamination to ensure lubrication path (gap between inner & outer link plates) is clear
Evidence of blue colour on pins:	Blue colour signifies pin has reached high temperature caused by friction between pin and bush due to lack of lubrication:- Check all of the above Check viscosity index of lubricant Check line tension
Evidence of link plate marking:	Check sprocket alignment Check sprocket to guide alignment Check sprocket radial runout

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