

TENTER CLIPS & CHAINS

for Biaxially Oriented Film Manufacturing Machine



SHINKO

Tenter Clips & Chains

Based on our proven & trusted experiences, SHiNKO is ready to meet customer requests on a wide range of film types, different production requirements and etc!



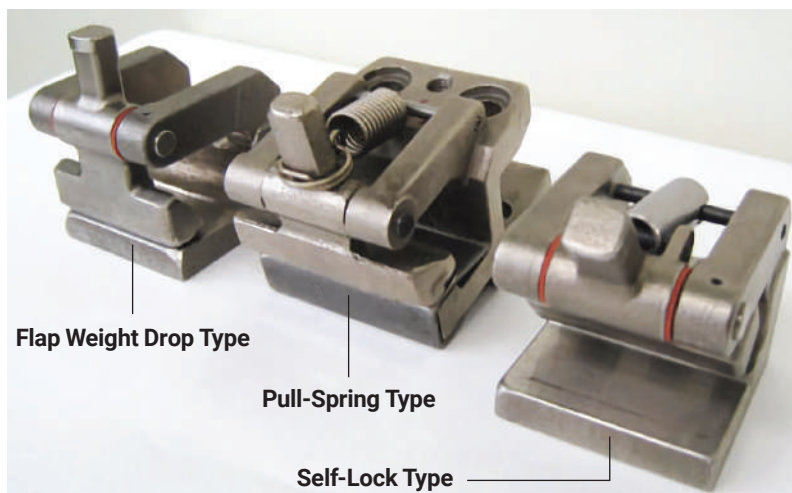
1. Clip Types by Flap Movement
2. Clip Types by Flap Tooth Type
3. Clip Types by Running Method
4. Clip Design Requirements
5. Typical Questions
6. Clip Maintenance

SHiNKO, as a total Clips & Chains manufacturer, is able to provide any types of clips & chains available in the industries!

《Examples》

- Clips & Chains For Simultaneous Biaxially-Stretched Machine
- Clips & Chains with Longitudinally-Relaxing Function
- Clips & Chains to reduce Neck-In problem
- Clips & Chains for Magnet Opener & Closer
- ... etc

1. Clip Types by Flap Movement



① Flap Weight Drop Type

Flap dropped by its weight to chuck the film.

② Pull-Spring Type

Flap pulled by spring to closing direction in order to avoid flap opening such as by vibration.

③ Self-Lock Type

Flap opening & closing state kept by Spring snap-action.

At Toggle Opening ⇒ Keep the flap opening state

At Toggle Closing ⇒ Keep the flap closing state

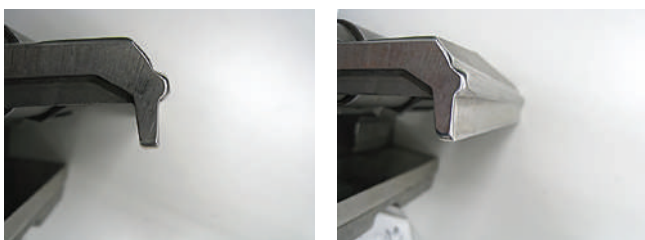
* Spring force switches opening or closing direction when its fulcrum pin exceeds its neutral point.

2. Clip Types by Flap Tooth Type

① Arc Shape Tooth Clip

Stable film chucking for wide range of film thickness

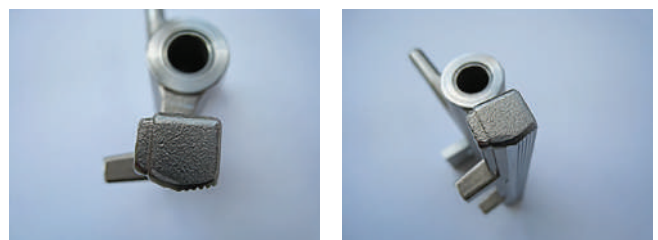
Films: PET, TAC ...etc



② Arc Shape Tooth Clip with Serration

Improved cleanliness type

Films: OPP, Nylon, PE, PS ...etc



③ Arc + Blade Shape Tooth Clip

For low friction coefficient THICK film

Films: OPP, PS ...etc



④ Blade Shape Tooth Clip

For low friction coefficient film

Films: OPP, PE, PS, PVC ...etc

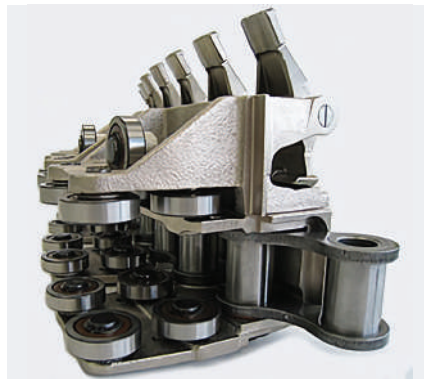
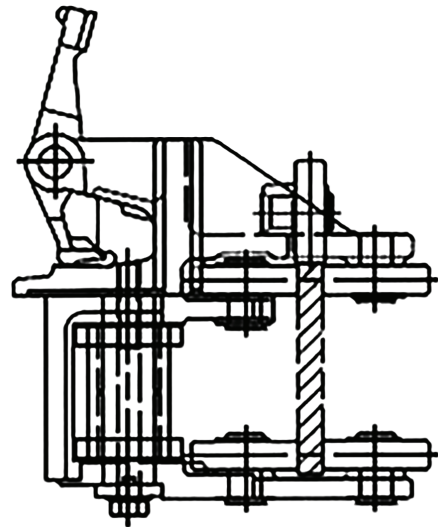
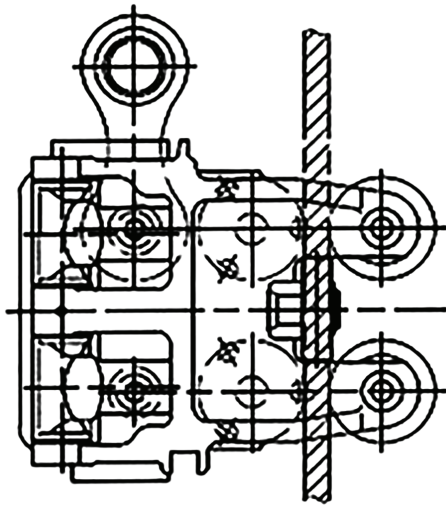


⑤ Any type of clips could be provided according to the requests on film types, production requirements and etc.

3. Clip Types by Running Method

① Ball Bearing Type

Clips run the rail with ball bearings fixed on pin link body.



Examples of Ball Bearing Type Clip Chains



5P9Brg Type



4P5Brg Type



3P5Brg Type

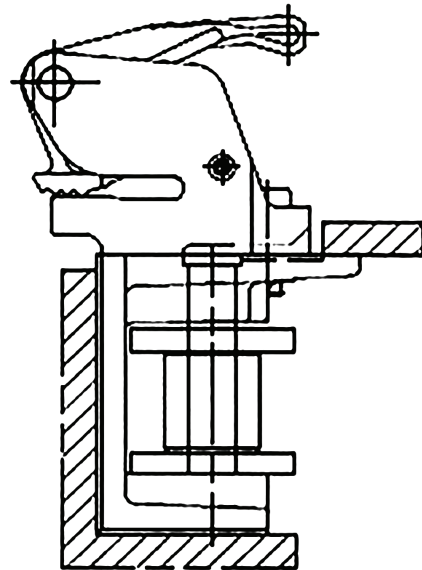
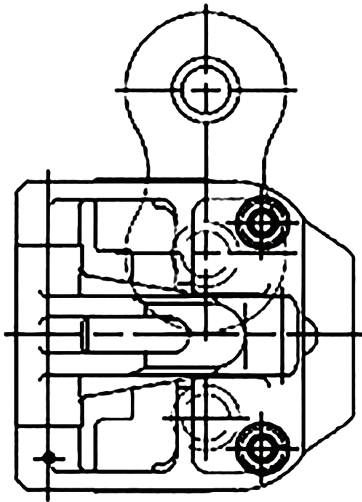


2P4Brg Type

Other types like 4 bearings, 6 bearings & 9 bearings are available upon requests.

② Sliding Type

Oil-lubricated flat part of pin link body slides on the rail.



Metal Sliding Type



Resin Sliding Type

Suitable for High Speed Application with less oil lubrication requirement in comparison with Metal Sliding Type

4. Clip Design Requirements

- Film Type & Thickness
- Film Stretching Force or Stress
- Oven Temperature & Atmosphere
- Line Speed
- Flap Tooth Type

5. Typical Requirements

1. Improving a Chucking Performance
 - For Thicker Film Chucking
 - For Thinner Film Chucking
 - Avoiding Film Slipping
 - Avoiding Film Bite-Off
2. Reducing Film Neck-In
3. Maintaining the same extension on the both side of chains
4. Avoiding oil attachment to Film
5. Reducing oligomer attachment
6. For Heavy Duty
7. For Higher Line Speed
8. ...etc

All of the above are handled by SHINKO!

6. Clip Maintenance

Our Goal for Maintenance as well as design and production is always Customer Satisfaction in terms of "Reliability", "Quality" & "Long Life".



"Before" maintenance



"After" maintenance



"Before" maintenance



"After" maintenance



"Before" maintenance



"After" maintenance



Flap DU Bush "Before"



Flap DU Bush "After"



Roller Link "Before"



Roller Link "After"

Tenter Clip And Chain Application Information Sheet

Submitted By _____

Date _____

Customer Information

Contact Name _____

Title/Function _____

Company _____ ☐ End User ☐ OEM

Address _____

Plant Location _____

City _____

State _____ Zip _____

Phone _____

Fax/E-mail _____

Required Items and Quantity

Requested Delivery : _____

(1) New clips for spares* _____ pcs

(2) New chain for spares* _____ pcs

(3) Rebuild clips** _____ pcs

(4) Rebuild chains _____ pcs

*For new parts, please send us samples or drawings

**For rebuilds, please send us 10 pcs in the worst condition

After evaluating the samples we will provide a proposal for rebuild or overhaul including any new parts for exchange.

Attached drawing No. _____

Details of Manufacturing Machines

Year Installed _____ No. of units _____

Film : BOPP _____ BOPET _____ Other _____

Film thickness (in microns) : Min. _____ Max. _____

Production line : Length (m) _____ Clips per line _____ [pcs]

Oven temperature : Max. _____ [°C] Normal operating _____ [°C]

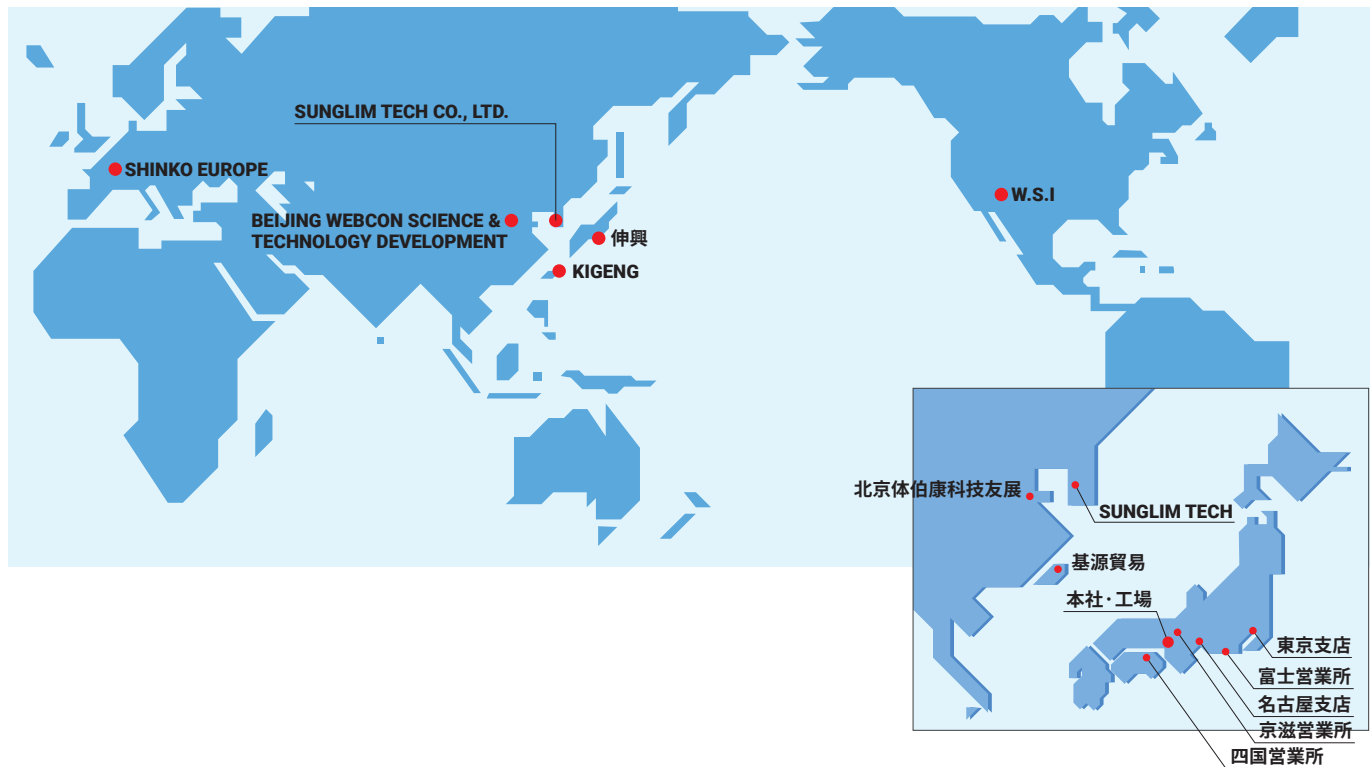
Clip Chain type : Slide _____ Bearing _____ Other _____

Line speed (m/min) : Min. _____ Max. _____

Other Manufacturing Machines :

Manufacturer	Year Installed	Production line length	No. of units
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_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____



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