

Non-scratching Tension Unit for Metal Slitter-line T.M.

BELTBRIDLE

(Patent)

TYPE-II

To wind up coils as they are beautiful,



BELTBRIDLE
will respond well to such needs.



JAPAN DEVELOPMENT CONSULTANTS, Inc.

*We are awaiting your inquiry with
the questionnaire below;*

A. Material :

1. Kind(s) _____
2. Condition of Surface: Dry and / or Oily, or Any other ? _____
3. Thickness Range : min. _____ mm. ~ max. _____ mm.
4. Coil Width & Weight : max. _____ mm. ~ max. _____ kg.
5. Strand(s) Width : min. _____ mm. ~ max. _____ mm.
6. No. of Strand(s) : min. _____ pc(s), max. _____ pcs.
7. Any Specialities ? : _____

B. Line Mode :

1. Kind : Slitting, Recoiling, Annealing, Other ? _____
2. Slitting : Pull and / or Drive cut (deep looping pit type) ? _____
3. Line Speed : min. _____ m / min. ~ max. _____ m / min.
4. Recoiler : Power _____ KW (DC or AC), Drum Dia. ϕ _____ mm.
5. Tension : max. _____ kg., (Unit tension _____ kg / mm²)
6. Separator : Rotary disc type ? or Other ? _____
7. Pass Height: _____ mm. from floor top.
8. Line Flow : Left to Right, or Right to Left (view from operator)

C. Utilities :

1. Electric source : (for Motor) AC / DC _____ V. _____ Hz.
(for control) AC / DC _____ V. _____ Hz.
2. Hydraulic source : max. _____ kg / cm²
3. Compressed Air : max. _____ kg / cm²

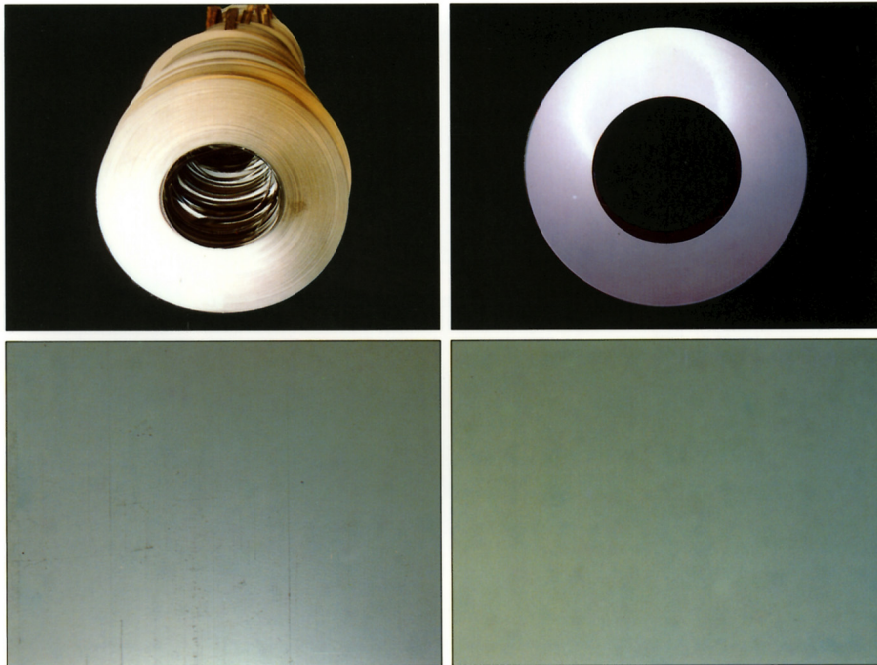
*Embossed material (back-ground picture) is also
very suitable for the **BELTBRIDLE***



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Which coil is more valuable?



★ The photograph on the left above shows the profile and part of the surface of a coil rolled round by means of the ordinary tension unit which is generally used. Many problems are apparent here, such as those given below.

- Due to insufficient tension or unevenness in tension of the strips, the rolled coil is crushed and becomes elliptical.
- Due to imbalanced tension or the strips moving at different speeds, the coil edge is not uniform. (telescoped or zig-zagged).
- Due to the pressing of the felt (Tension Pad) and the slipping of the roll (Bridle Roll), dirt and scratches appear on the coil surface.

★ The photograph on the right above shows a coil which has been rolled round by means of the BELTBRIDLE developed by this company. There are absolutely no problems of the kind described above.

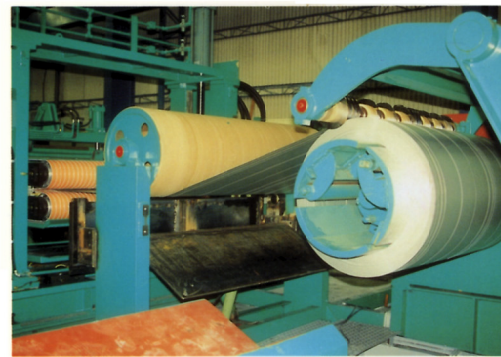
★ With the remarkable advances in diversification and upgrading of coil materials over recent times, the true value of the BELTBRIDLE is recommending it being recognized, and we feel confident in recommending it to you as a Non-scratching Tension Unit.

● NAME OF ACTUAL LINES

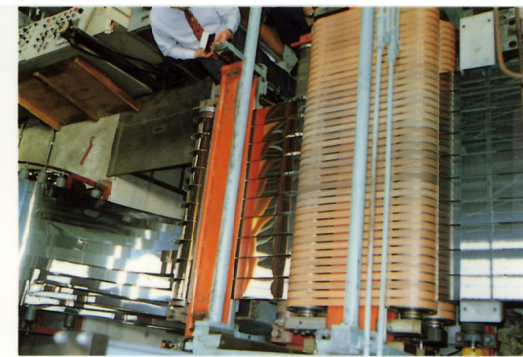
- Slitter line
- Annealing line
- Trimming line
- Laminating line

● ACTUAL MATERIALS BEING TREATED

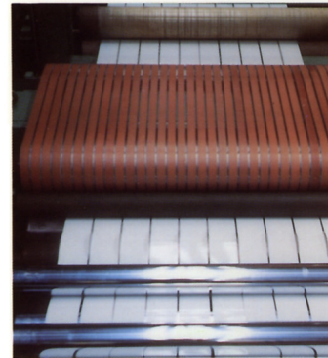
- Pre-coated steel
- Embossed steel
- Stainless steel
- Electro-magnetic steel (Si-steel)
- Copper and copper alloys
- Galvanized steel
- Tin-plated steel
- Titanium steel
- Recoiling line
- Coating line
- PVC-coated steel
- Turn sheet steel (lead coated)
- 42% Ni-steel
- Aluminum
- Carbon steel (high & low)



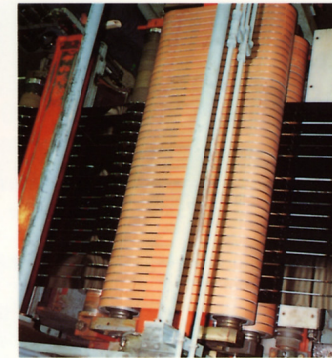
Pre-coated Steel



Stainless Steel



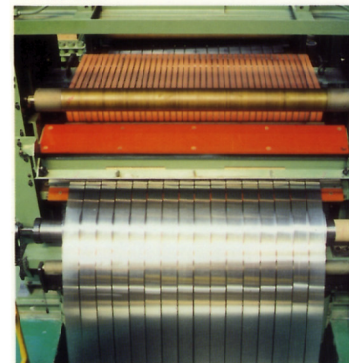
Painted Steel



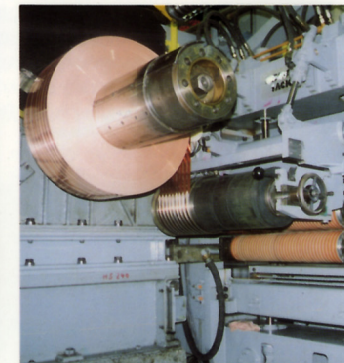
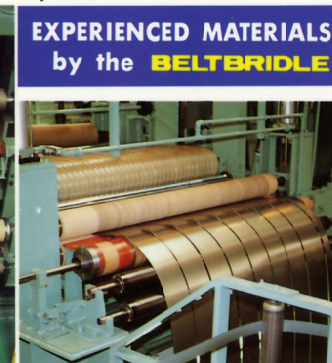
Vinyl-coated Steel



Aluminum

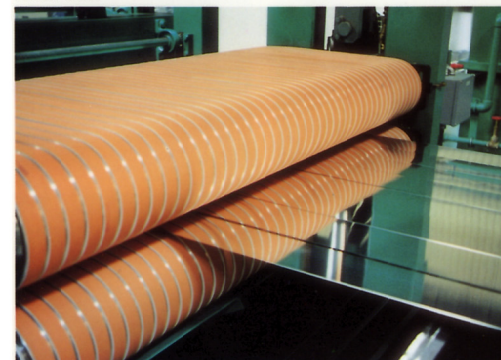


Silicon Steel

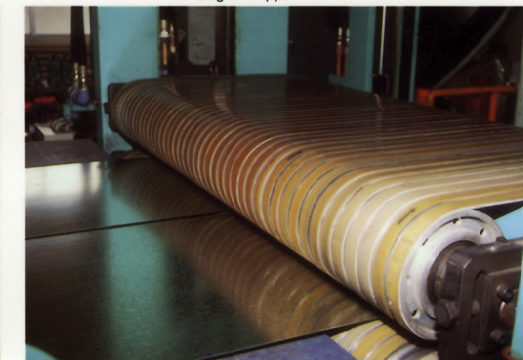


Bright Copper

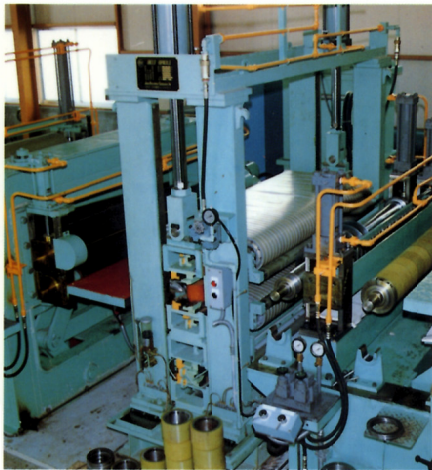
**EXPERIENCED MATERIALS
by the BELTBRIDLE**



Tin-plated Steel

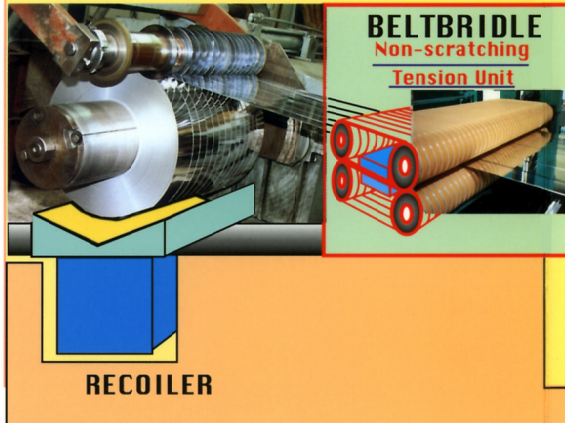


Galvanized Steel

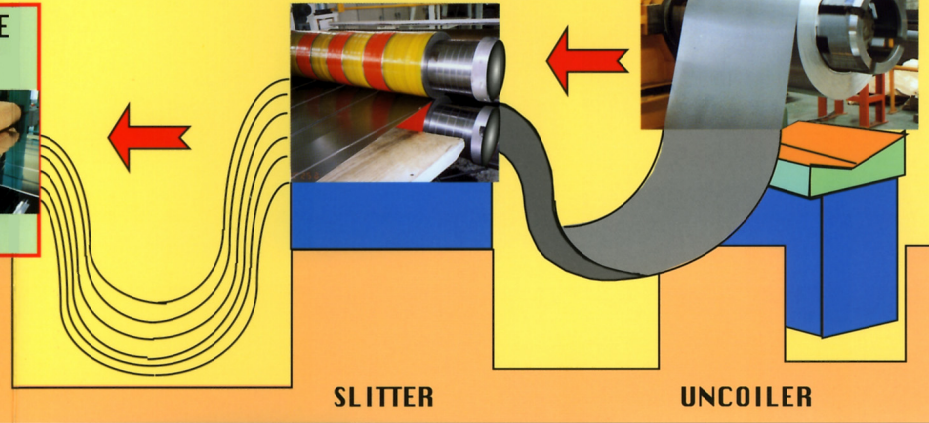


Combination Type **BELTBRIDLE**

BELTBRIDLE can provide suitable recoiling-tension without scratches or marks for the high quality and beautiful surface materials.



The Schema of Coil Slitting line



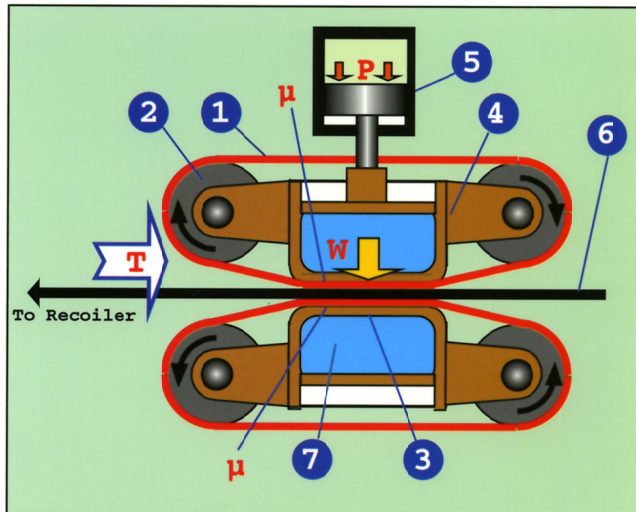
OUTLINE OF THE BELTBRIDLE

As there is a difference in friction coefficient for the outer and inner surfaces of the belts (the friction coefficient of the outer surface is greater than that of the inner surface), the specially composed endless belts(1) are extended by the idle pulleys(2). In the center there are slider metal sections(3) which have been specially processed on the surface. There are fixed by the frames(4) arranged in the middle section and comprise the upper and lower elements respectively. While the lower element is fixed to the steel stands, the upper element is constructed to move up and down by means of the cylinders(5). When the strip(6) pulled to the direction of tension(T) indicated by the arrow mark, the sides of the belts with the larger friction coefficient are on contact with the strips. The inside surfaces of the belts having the smaller friction coefficient, on the other hand, are in contact with the slider metal sections along which they slide. So these endless belts move(rotate) by being pulled by the strips. At this time the friction resistance generated between the slider metal sections and inside surfaces of the belts becomes the tension of the strips. The tension(T) can be adjusted as required by increasing or reducing the downward pressure(P) of the cylinder. In order to eliminate the friction heat which is continuously generated, the slider metal sections are adjoined by water jackets(7), and are efficiently cooled by the attached circulating water cooling units. In applying this principle, in order to cope with a number of strips and the changes in width, the strips are separated on the machine horizontally and the special endless belts are arranged accordingly.

PART NAMES

- ① Special endless-belt
 - ② Idle pulley
 - ③ Slider metal
 - ④ Frame
 - ⑤ Hydraulic cylinder
 - ⑥ Strip(s)
 - ⑦ Water jacket
- (T) Tension
(P) Hydraulic pressure
(W) Downward load
(μ) Frictional coefficient of belt & slider metal

$$\therefore T = 2 \mu \cdot W$$



CONCEPTION (SECTIONAL VIEW)

FEATURES AND ADVANTAGES OF BELTBRIDLE

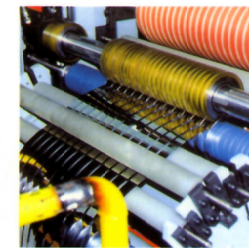
- As the special endless belts adhere closely to the strips as they rotate, there is absolutely no scratching.
- As the special endless belts are separated into a number of bands, they keep the tension for all the strips uniform.
- The endless belts are specially made of a flexible material so that they grip the strips plially. The result is that there no damaging marks on high-grade metals, very thin materials, soft coated materials and even non-ferrous products.
- In that the tension is adjusted by means of the downward pressure of the cylinder, BELTBRIDLE is just as easy to use as the conventional tension pad system.
- Because there is no longer any problem regarding tension, the strips can always be passed through at full speed and the productivity is excessively improved.
- As the construction is simple, maintenance is easy, there are no breakdowns, and the cost for upkeep is very low.



Pull-out Separator

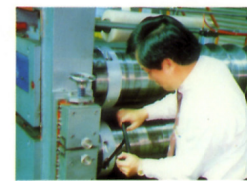


Omega Type **BELTBRIDLE**



Pre-tensioner

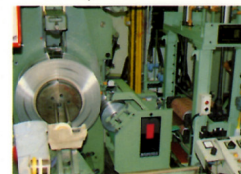
OPTIONS & ACCESSORIES



3K-NUT



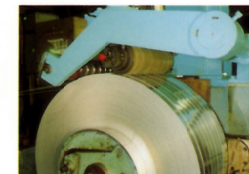
SealEX Shaft



SD-ROLL



HYSREC



FLEXROLL



BELTFINGER