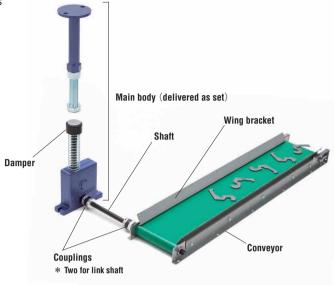
[PRODUCT DATA ①] picsy Conveyor — Guide —

■ Product Guide

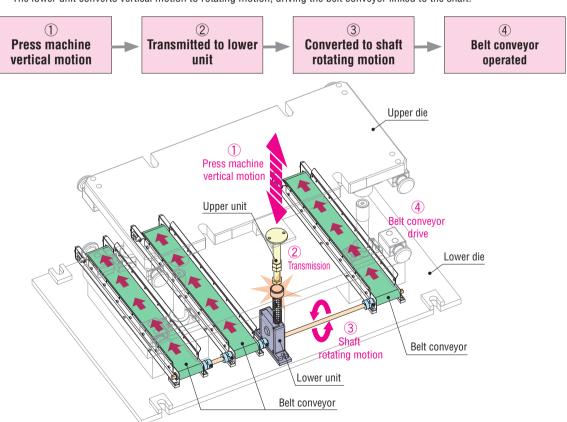
- This product uses the vertical motion of the press machine to operate the belt conveyor.
- It can be used for conveyance of press products, such as ejecting scrap outside the die.



[Figure 1] Components

■ Drive Structure

- The vertical motion of the press machine is transmitted to the lower unit via the upper unit mounted to the die (upper die).
- The lower unit converts vertical motion to rotating motion, driving the belt conveyor linked to the shaft.



■ Functions/Benefits of Installation

No power supply required

- Uses the vertical motion of the press machine to drive the belt conveyor, helping to reduce power costs.
- Helps to prevent careless mistakes, such as forgetting to turn the compressor or motorized conveyor on or off.
- No issues with voltage differences or the like when used overseas.

Reduces belt breakage
Eliminates product dents/
scratches
and die damage

- The conveyor is stopped when the press reaches the bottom dead center, greatly reducing damage to the belt.
- Products are transported by conveyor, preventing scrap from scattering, entering the press surface, or denting/scratching products.
- With scrap chutes, the gradient cannot be ensured and dies could be damaged by scrap clogging. However, the use of a conveyor solves these problems.

Reduces setup work

- Spare yourself the trouble of the compressor/air piping and wiring required for air blowers. Can be used just by installing the main body and conveyor in the die/press machine.
- A flexible shaft is used in the linkage area (PRODUCT DATA (3) [Fig. 5]) for more flexible conveyor positioning. Linking is possible even if there is a difference in level in the positions of the main body and conveyor.
- Multiple conveyors can be linked to a single main body.

Prevents scrap pull-in

 Wing brackets (EST PRODUCT DATA ① [Fig. 1]) are equipped as standard on both sides of the conveyor to prevent scrap from being pulled into the belt. This can also reduce malfunctions such as belt snapping.

Slim design

• Conveyor area has a slim design (minimum thickness 12 mm). (thin type)

Improves work environments

- Prevents oil adhered to scrap from splattering in the work environment, keeping floors and air clean. Overturning prevention helps to keep workers safe.
- Eliminating the loud noise of air blowing is also an effective environmental measure for workplaces.
- Reduced CO₂ emissions also contribute to promoting ISO environmental measures.

2

[Figure 2] picsy Conveyor drive structure

[PRODUCT DATA 2] picsy Conveyor — Components —

[PRODUCT DATA $\ 3\]$ picsy Conveyor - Selection Method -

■ Main Body

• The upper unit and lower unit form a set.

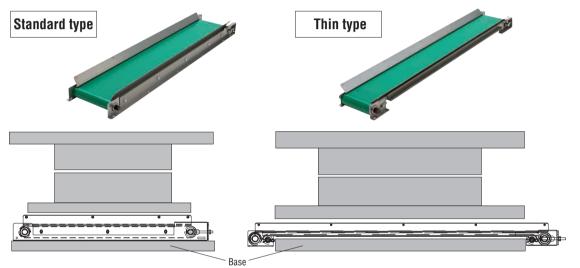
Maximum stroke length: 70 mm

* Always use at 70 mm or lower.



Conveyors

• Two types are available: standard type (45 mm thick) and thin type (12 mm thick).



Belts

• Three types are available: urethane (standard), urethane (rippled), and Kevlar (glass fiber).

Photo	Material		Feat	ures	Main uses	
FIIOLU	Material	Oil resistance	Slip resistance	Cut resistance	Wear resistance	Maili uses
	H Urethane (standard)	0	\triangle	0	\bigcirc	Product conveyance in press machine areas Steel sheets, automotive parts, scrap, etc.
	T Urethane (rippled)	0	0	0	\bigcirc	Conveyance of thin sheets, light objects, etc. Conveyance on reverse gradient is also possible
	K Kevlar (glass fiber)	0	0	0		Conveyance of high-tensile materials and heavy scrap

■ Shafts/Couplings

- Use either a link shaft or flexible shaft for linking.
- The flexible shaft includes integrated couplings. If using a link shaft, two separate couplings are required.







Coupling (MISUMI standard part) XGS-34CS-15-15

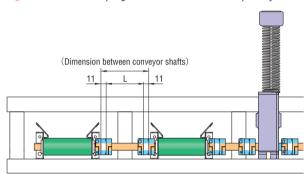
■ How to Select Parts

- When installing the picsy Conveyor, determine the positioning of the main body/conveyor and the shaft type (link or flexible).
- Next, follow the procedure to determine the dimensions and quantity (couplings) for each part (conveyor and shaft).

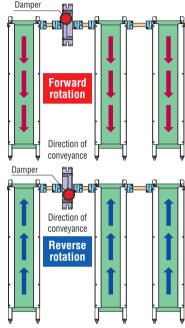
1) If the main body (lower unit) and conveyor can be positioned on the same axis

- Use a link shaft. During use, prepare two couplings for each link shaft. [Fig. 3]
- The product supports both forward and reverse rotation. so confirm the damper position of the lower unit when linked.
- Multiple units can be linked. As a guideline, use three units per main body unit.

Tink shafts and couplings are not included. Order separately.



[Fig. 3] Linked with link shaft



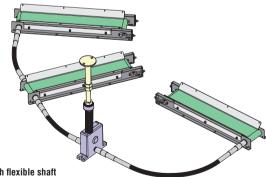
[Fig. 4] Multiple units linked

2) If the main body (lower unit) and conveyor cannot be positioned on the same axis

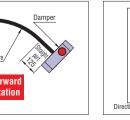
• Use a flexible shaft.

Direction of conveyar

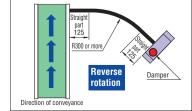
- This includes integrated couplings, so separate couplings are not required. [Fig. 5]
- · Note the following if using a flexible shaft.
- The areas within 125 mm of the left and right ends cannot be bent.
- Specify a length at which R300 or greater can be maintained when linking.

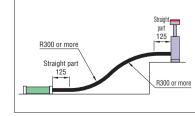


[Fig. 5] Linked with flexible shaft



Example ①: Forward rotation and level mounting Example ②: Reverse rotation and level mounting





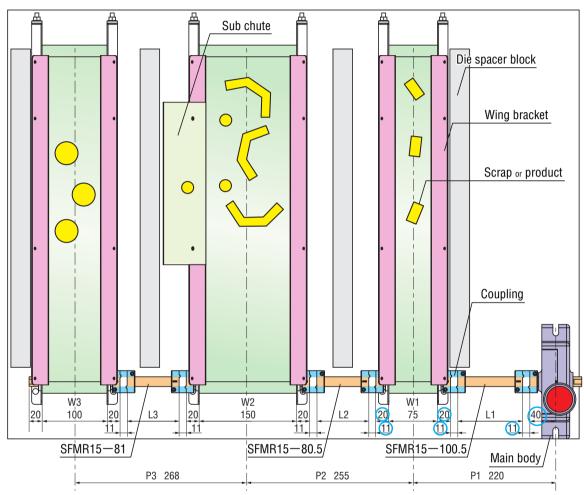
Example 3: Height difference at mounting position

[PRODUCT DATA 4] picsy Conveyor — Selection Method —

[PRODUCT DATA 5] picsy Conveyor — Selection Method —

■ When Installed to Steel Die

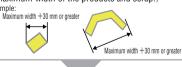
• Refer to the plane figure below, and follow the procedure to determine the dimensions and quantity (couplings) for each part (conveyor and shaft).



1 Determine the conveyor width (W)

Determine the conveyor width based on the size of the transported parts and the drop position.

· We recommend selecting a generous width. (At the very least, ensure a width 30 mm larger than the maximum width of the products and scrap.)



2 Determine the conveyor pitch (P)

Determine the main body and conveyor positions, and then measure as shown below. P1: Pitch between main body and nearest conveyor P2. P3: Pitch between conveyors

3 Determine the shaft length (L)

Calculate using the following equations.

For the sample figure:

L1=P1-W1/2+82* 220 - (75/2) + 82 = 100.5 mm[Shaft model: SFMR15—100.5]

L2=P2-(W1+W2)/2-62*255-(75+150)/2-62=80.5 mm [Shaft model: SFMR15-80.5]

L3=P3-(W2+W3)/2-62*268-(150+100)/2-62=81 mm [Shaft model: SFMR15-81]

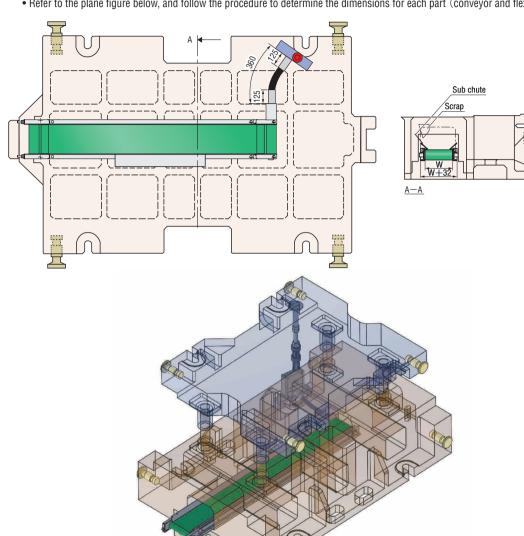
4 Coupling quantity

Conveyor quantity × 2 For the sample figure: $3\times 2=6$

* The 82 and 62 values in the equations are rough totals of each measurement encircled with O in the figure. 82 (between main body and conveyor) 62 (between conveyors)

■ When Installed to Casting Die

• Refer to the plane figure below, and follow the procedure to determine the dimensions for each part (conveyor and flexible shaft).



1) Determine the conveyor width (W)

Determine the conveyor width based on the size of the transported parts and the drop position.

• We recommend selecting a generous width. (At the very least, ensure a width 30 mm larger than the maximum width of the products and scrap.)





The maximum width of the conveyor main body will be W+32 mm. Check for interference with the mounting space.

2 Determine the main body mounting position

Determine the mounting position after confirming interference with the rib.

3 Determine the flexible shaft length (L)

The areas within 125 mm of the ends of the conveyor flexible shaft cannot be bent. Keep this in mind, and specify a length at which R300 or greater can be maintained.

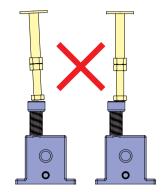
For the sample figure: FLSFT-360

[PRODUCT DATA 7] picsy Conveyor — Usage Precautions —

■ Main Body Mounting Precautions

1) Check for inclination/centering deviation

- Install the upper unit so that there is no inclination. Install the upper and lower units so that there is no centering deviation. [Fig. 6]
- Never allow upper unit inclination
- Never allow upper/lower unit centering deviation



[Fig. 6] Inclination and deviation confirmation

2) Confirm the stroke length

- The maximum stroke is 70 mm.
- If exceeding 70 mm, the vertical rack (lower unit) will be damaged. [Fig. 7]
- Make sure that the bottom dead center is not below the total length of the main body unit, 243 mm.

Upper die Upper unit 260/190 Vertical rack Lower die

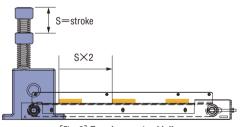
[Fig. 7] Maximum stroke

3) Conveyor travel amount guideline

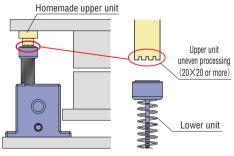
- The conveyor travel amount should be the main body stroke amount $(S) \times 2$. [Fig. 8]
- The travel amount may vary due to factors such as slipping caused by oil, depending on the workpiece (scrap or product).

4) Adjust/confirm the stroke

- If the die height is not compatible with the provided upper unit, you will need to prepare a component.
- We recommend using a component that will result in a contact area of 20 mm \times 20 mm or more.
- Be sure to provide uneven processing in the contact area. Oil could cause the damper (oil resistant rubber: Component (4) (picsy Conveyor Related Components)) to cling and lift the attached rack, causing it to detach. [Fig. 9]



[Fig. 8] Travel amount guideline



[Fig. 9] Upper unit (customer part) contact area alteration

■ Conveyor Usage Precautions

1) Confirm total payload

- Make sure that the total weight of the objects transported on the conveyor does not exceed the permissible range.
- The total permissible weight is the weight for all units when linked (i.e. the total weight of three units if three units are linked). Note that it is not the value for a single unit. [Table at right]
- As a guideline, use three units per single main body unit when linking conveyors.

2) Confirm the condition of the scrap and product when

- Do not use if the following situations could occur when driving the conveyor. Otherwise, malfunction or damage could result. [Fig. 10]
- Dropping impact could deform the metal plate part of the conveyor
- Scrap/products could turn vertically when dropping
- Do not allow scrap or products to ride up on the wing brackets. [Fig. 11]
- If the scrap or part drop position must be in a location not above the conveyor, install a sub chute to the wing bracket. Prepare the sub chute on your end. [Fig. 12]

3) Prevent foreign substances from adhering to the rack

- Make sure that foreign substances do not adhere to the rack.
- Operating with such substances adhered could cause rack galling and main body malfunction.

4) Apply grease/oil

- Periodically apply gear grease to the rack section of the main body.
- Use oil without extreme-pressure additives.

5) Check and prevent scrap from being pulled in

- Oil due to pressing could cause small pieces of scrap to adhere to the belt. This scrap could be pulled into the machine from beneath the convevor. [Fig. 13]
- Installing a scraper near the curved area at the end of the conveyor can prevent scrap from being pulled in.
- · Appropriately adjust the clearance between the scraper and conveyor belt. [Fig. 14]

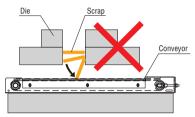
(Reference) Scraper shape

Refer to the drawing at the following site for the mounting position. [Fig. 15] Site currently being prepared. June launch scheduled.

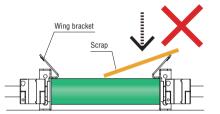
Prepare the scraper on your end. It cannot be ordered as a standard part.

Press speed	Total permissible weight (kg)						
(SPM)	Link shaft	Flexible shaft					
50	30	15					
60	25	10					
70	20	8					
80	15	5					
100	8	3					

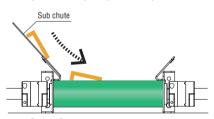
[Table] Guidelines for press speed and payload



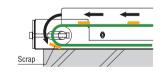
[Figure 10] Scrap and product drop condition



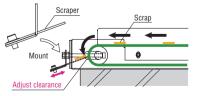
[Figure 11] Scrap and product drop condition



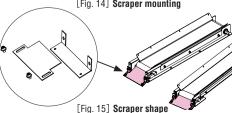
[Fig. 12] Drop position outside conveyor



[Fig. 13] Scrap pull-in



[Fig. 14] Scraper mounting



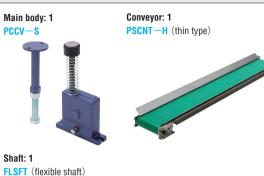
[PRODUCT DATA 9] picsy Conveyor — Actual Equipment Installation Example —

■ Installation Example ①



- Press machine: Single-shot press (150 t)
- Press speed: SPM10
- * Previously used scrap box (manual disposal)

Recommended parts



■ Installation Example ②



- Press machine: Progressive press (300 t)
- Press speed: SPM50
- * Previously used scrap chute and air cylinder

Recommended parts



■ Installation Example ③



- Press machine: Servo press (110 t) automated line
- Press speed: SPM42
- * Previously used air blow

Recommended parts



Company S (Automotive Parts Press Manufacturer)

- Company S began its efforts to dramatically reduce expenses as a result of the global financial crisis in September 2008. They discovered that the power consumed by their scrap ejection air blow accounted for a large portion of expenses in their press plant.
- They attempted to revise the compressor specification and the nozzle diameter of the air blow in an attempt to improve the situation, but the benefits did not repay the expended time and effort.
- The picsy Conveyor requires no power source, so installing this product allowed them to eliminate the power that the air blow had consumed, reducing expenses by roughly JPY 2.2 million per year. They are also contributing to the environment, as reducing power consumption is directly connected with reducing CO₂ emissions. They are now looking into further implementation.
- **Before/After Comparison** (press machines: two 300 t transfer presses, SPM20)



■ Ejection method: Scrap chute and eight air blow locations
■ Issues: Air left on (wasted), noise, oil splattering

[Assumptions] Operated eight hours/day, 150,000 pieces produced in 25 days

■ Air Usage

 ϕ 4 (1.056 L/sec.) 8 units \times 60 sec. \times 8 hours \times 25 days = 101.376 m³/month

Power Usage

 $101,376 \text{ m}^3/10 \text{ m}^3/\text{kWh} (*) = 10,138 \text{ kWh/month}$

* 10 m³/kWh figure taken from compressor manufacturer catalog

■ Effects of Decreasing Power Bill

- 10,138 kWh \times JPY 18.05/kWh (*) \times 12 months = JPY 2,195,890/year
- * JPY 18.05/kWh = power usage + basic rate proportional division Varies based on power company

■ Effects of Decreasing CO₂ Emissions

10,138 kWh \times 0.000387 (*) \times 12 months = 47 tons/year

* CO₂ emission coefficient: kg—CO₂/kWh

(indicator used to estimate carbon dioxide emissions,
when a power company generates a certain amount of power)



Power bill: JPY 2,195,890 CO₂ emissions: 47 tons



A video is available for this actual equipment installation example.

Currently being prepared. June launch scheduled.



- Ejection Method: picsy Conveyor (one main body, three linked conveyors)
- Resolved Issues: Air blow eliminated, no noise, no oil splattering

[PRODUCT DATA 1] $extbf{picsy Conveyor} - ext{Reference: Air Blow Improvement} - extbf{picsy Conveyor}$

■ Cost/Properties Comparison by Scrap Ejection Method (at MISUMI partner plant)

	Scrap ejection	Air blow	Motorized conveyor	Conveyor without power supply	
method and overview Comparison items		Requires metal plate chute and piping installation. Nozzles blow air toward the scrap drop position.	A conveyor is placed inside the die to eject scrap. The motor section protrudes, so mounting space is somewhat restricted.	Uses a dedicated conveyor and is mounted on a dedicated unit. Uses the vertical drive of the press to operate without a power supply.	
Initial costs (JPY 10,000)		10 ~ 14	20 ~ 25	20	
Running costs	Power costs	70 ~ 80	2~3	0 (100% reduction)	
(JPY 10,000/month)	Setup costs	30 ~ 40	80 ~ 100	0	
Product dents/scra	tches and die damage	Scrap scattering/contamination	0	(quality improved)	
Work en	vironment	Noise, oil splattering, scattering	Workers forget to turn power ON/OFF	(work environment improved)	
Setup work		Piping	Wiring	(setup reduced)	
Ejection issues		Scattering/clogging	0	(no noise/oil splattering)	
Mounting space		Complicated compressor piping	(cannot be installed if spacer block is low)	(can also be installed in die)	
CO ₂ e	missions	17 t/year	0.07 t/year	0 (100% reduction)	

[Basic Information]

- 300 t class progressive die. Scrap chutes installed in three locations.
- Operates for eight hours/day, 25 days/month.
- Hourly charge calculated as JPY 4,000.

■ Conditions in Air Blow Area



- Air Blow Piping
- Takes time to position, set up, and adjust piping.



- Scrap Chute Used
- The force of air causes scrap to spill out from the chute and on the bolster.



- Scrap Box Used
- The force of air scatters scrap outside of the box and on the bolster.

■ Example of Air Blow Improvement

Although it is possible to reduce air blow power consumption through skillfully using the compressor, there is little benefit compared with the amount of effort and time required, and it accounts for a large amount of the power used.

<Comparison of improvement results> picsy Conveyor implementation > air blow improvement

- Preliminary Calculation Conditions
- Compressor rated capacity: 37 kW
- Daily operation time: 8 hours
- Power unit: JPY 18.05/kWh
- Operating ratio: 80%
- Annual operating days: 250

[Improvement ①] Compressor intake temperature reduced from 35°C to 27°C

 \Rightarrow Power consumption reduction ratio: 3%

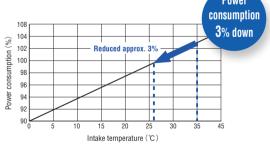
■ Reduction Effects

Power savings = $37 \text{ kW} \times 80\% \times 8 \text{ hours} \times 250 \text{ days} \times 3\%$

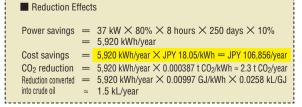
= 1,776 kWh/year

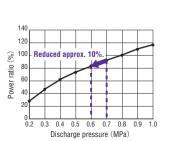
Cost savings = $1,776 \text{ kWh/year} \times \text{JPY } 18.05/\text{kWh} = \text{JPY } 32,057/\text{year}$

CO2 reduction = 1,776 kWh/year \times 0.000387 t CO2/kWh \approx 0.7 t CO2/year Reduction converted = 1,776 kWh/year \times 0.00997 GJ/kWh \times 0.0258 kL/GJ into crude oil \approx 0.5 kL/year



[Improvement ②] Compressor discharge pressure reduced from 0.7 MPa to 0.6 MPa ⇒ Power consumption reduction ratio: 10%

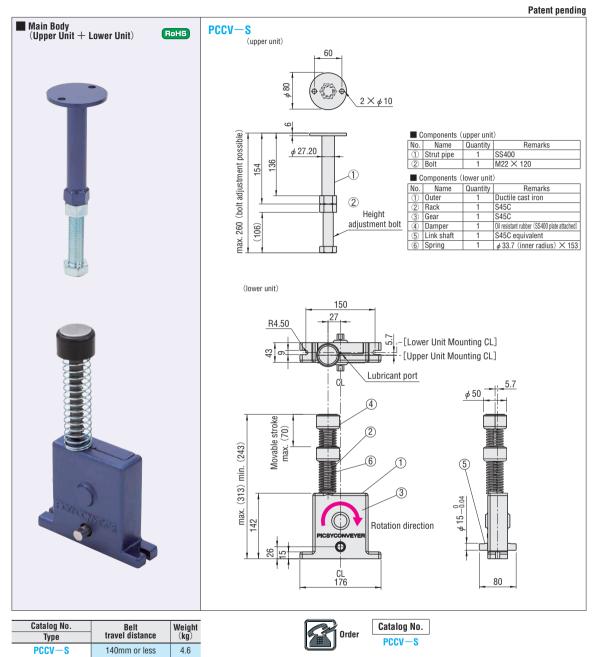


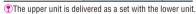


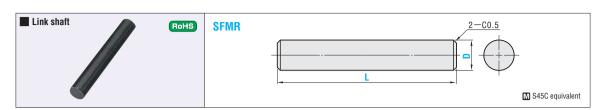
Power consumption 10% down

[Conditions]
Intake air temperature: 20°C
Intake air humidity: 60%
Intake pressure: —50 mmAq
Compression levels: 1
Flow rate: Constant

picsy Conveyor Related Components



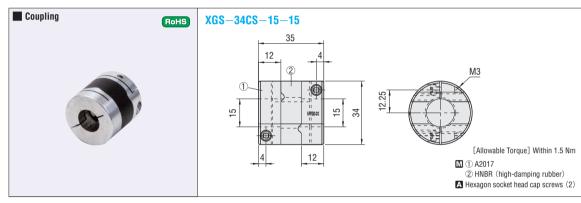




• Use if the main body and conveyor can be linked on the same axis. ⇒ Mounting example ► PRODUCT DATA ③ [Fig. 3] TUse as a set with two couplings.

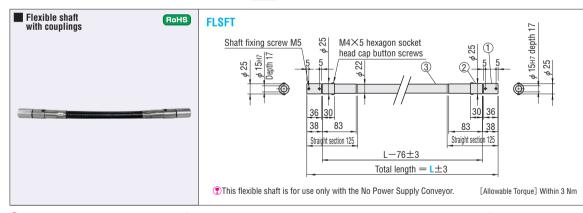






- ©Couplings are not required if using a flexible shaft.
 ©Use as a set with the link shaft. Two are required for each link shaft.

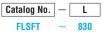


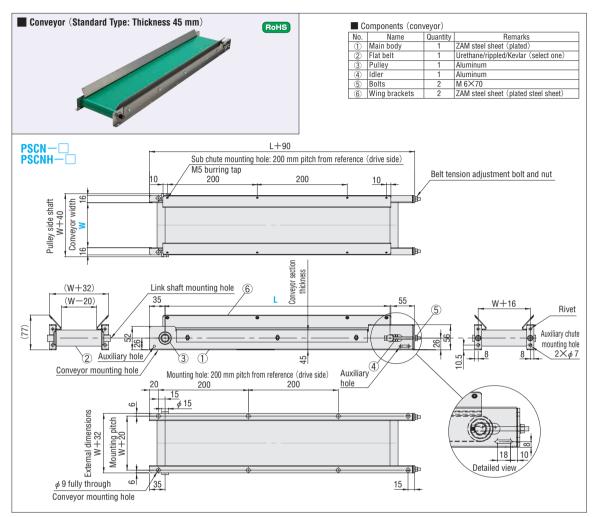


- Tuse this if linking on the same axis is impossible (for example, if there is a difference in level in the positions of the main body and conveyor)
- ©Includes couplings. Connect directly to the link shaft on the main body and shaft section of the conveyor. ⇒ Mounting example ► PRODUCT DATA ③ [Fig. 5]
- The areas within 125 mm of the ends cannot be bent. Take care when selecting the total length.
- TUse at R300 or greater.
- Supports both forward rotation and reverse rotation. ⇒ Mounting example **PRODUCT DATA** ③ [Fig. 5]

Catalog No.	L 10mm increments			
Туре	TOTALITA INICI CINICINS			
FLSFT	300~2000			







Conveyor W dimension, L dimension selection type

	Conveyor W dimension, L dimension specification typ
--	---

Maximum	Cata	alog No.	W			Wing	Maximum	Cata	log No.	W	L	Wing
width	Type	Belt material	VV	_		bracket	width	Type	Belt material	5mm increments	5mm increments	bracket
		dard type	75	400* 500	450 550				lard type	50~7 5	300~1800	
W L oo	(sta	CN—H andard)	100 125	600 700	650 750	N	W L oo	(sta	NH—H andard)	80~250	405~1800	N
W+32	(ri	CN—T	150 200	800 1000	900 1100	(only when not required)	W+32	(rij	NH—T ppled)	255~400	505~1800	(only when not required)
		PSCN—K (Kevlar) 250 1200 1300 1400 1500				NH—K evlar)	405~500	605~1800				

Selection type L400 applies only for W75/100.

The W dimension is the actual width of the belt. The effective width will be 20 mm narrower with the wing brackets attached. Use caution.



Catalog No.]-[W]-[L		Wing bracket not required
PSCN-H	_	250	_	900	_	N
PSCNH-K	_	355	_	1545		

• Wing brackets are equipped as standard. Specify "N" if not required.

■ Guidelines for Press Speed and Payload

Press speed	${\bf Total\ permissible\ weight\ (kg)}$					
(SPM)	Link shaft	Flexible shaft				
50	30	15				
60	25	10				
70	20	8				
80	15	5				
100	8	3				

■ Belt Features/Purposes

Photo	Material	Features/purposes
	H Urethane (standard)	This polyester filament belt offers many excellent properties making it suitable for conveyors, such as durability, impact resistance, chemical resistance, and oil resistance. It can be used to transport a range of products around press machines. (Steel sheets, automotive parts, electrical appliance parts, press scrap, etc.)
	T Urethane (rippled)	This standard belt features a rippled surface to prevent transported objects from easily slipping. It is ideal for carrying thin sheets, light objects, oil, and other slippery products over a slanted surface.
	K Kevlar (glass fiber)	Made from glass fiber, this belt is resistant to wear caused by the edges of steel products and offers excellent cutting resistance, wear resistance, and durability. It is suited for conveyance under extreme conditions, such as conveyance of high-tensile materials, blanking lines, and heavy scrap.

■ Belt (single unit) W dimension, L dimension selection type

Catalog No. Type	W	L		
Standard type PSCN—BLTH (urethane) PSCN—BLTT (rippled) PSCN—BLTK (Kevlar)	75 100 125 150 200 250	400* 500 600 700 800 1000 1200 1400	450 550 650 750 900 1100 1300 1500	

■ Belt (single unit) W dimension, L dimension specification type

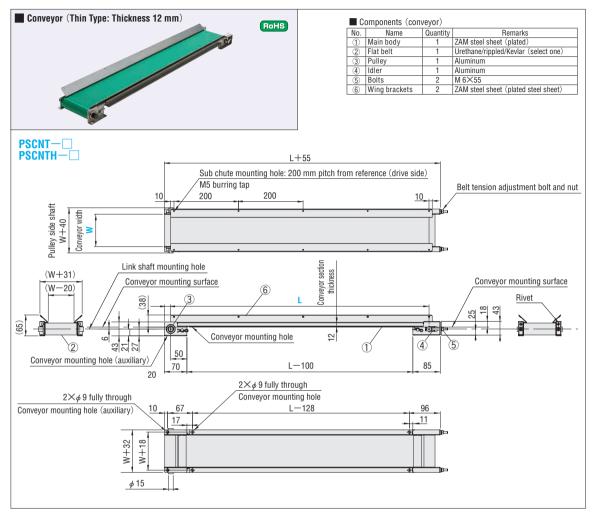
Catalog No. Type	W 5mm increments	L 5mm increments
	50∼75	300~1800
Standard type PSCNH—BLTH (urethane)	80~250	405~1800
PSCNH—BLTT (rippled) PSCNH—BLTK (Kevlar)	255~400	505~1800
	405~500	605~1800

For maintenance use, indicate the same W and L dimensions as indicated when the conveyor was ordered.





Selection type L400 applies only for W75/100.



Conveyor W dimension, L dimension selection type

■ Conveyor	W dimension,	L dimension	specification typ

Maximum	Cat	talog No.	w			Wing	Maximum	Cata	log No.	W	L	Wing
width	Type	Belt material	VV	_		bracket	width	Туре	Belt material	5mm increments	5mm increments	bracket
		hin type	75	400* 500	450 550				in type	50~7 5	300~1800	
W 00	(8	CNT—H standard)	100 125	600 700	650 750	N .	W 00	(sta	NTH—H andard)	80~250	405~1800	N
W+32	(CNT—T rippled) CNT—K	150 200	800 1000	900 1100	(only when not required)	W+32	(ri	NTH—T ppled) NTH—K	255~400	505~1800	(only when not required)
		(Kevlar)	250	1200 1400	1300 1500				(evlar)	405~500	605~1800	

Selection type L400 applies only for W75/100.

The W dimension is the actual width of the belt. The effective width will be 20 mm narrower with the wing brackets attached. Use caution.



Catalog No.]-[W]-[L		Wing bracket not required
PSCNT-H	_	250	_	900	_	N
PSCNTH-K	_	355	_	1545		

• Wing brackets are equipped as standard. Specify "N" if not required.

■ Guidelines for Press Speed and Payload

Press speed	Total permissible weight (kg)				
(SPM)	Link shaft	Flexible shaft			
50	30	15			
60	25	10			
70	20	8			
80	15	5			
100	8	3			

■ Belt Features/Purposes

Photo	Material	Features/purposes
	H Urethane (standard)	This polyester filament belt offers many excellent properties making it suitable for conveyors, such as durability, impact resistance, chemical resistance, and oil resistance. It can be used to transport a range of products around press machines. (Steel sheets, automotive parts, electrical appliance parts, press scrap, etc.)
	T Urethane (rippled)	This standard belt features a rippled surface to prevent transported objects from easily slipping. It is ideal for carrying thin sheets, light objects, oil, and other slippery products over a slanted surface.
	K Kevlar (glass fiber)	Made from glass fiber, this belt is resistant to wear caused by the edges of steel products and offers excellent cutting resistance, wear resistance, and durability. It is suited for conveyance under extreme conditions, such as conveyance of high—tensile materials, blanking lines, and heavy scrap.

Relt (single unit) W dimension 1 dimension selection type

Catalog No. Type	w	L	
Thin type PSCNT—BLTH (urethane) PSCNT—BLTT (rippled) PSCNT—BLTK (Kevlar)	75 100 125 150 200 250	400* 450 500 550 600 650 700 750 800 900 1000 110 1200 130	

■ Belt (single unit) W dimension. L dimension specification type

Catalog No. Type	W 5mm increments	L 5mm increments
	50∼75	300~1800
Thin type PSCNTH—BLTH (urethane)	80~250	405~1800
PSCNTH—BLTT (rippled) PSCNTH—BLTK (Kevlar)	255~400	505~1800
	405~500	605~1800

For maintenance use, indicate the same W and L dimensions as indicated when the conveyor was ordered.





Selection type L400 applies only for W75/100.