



Imagine & Create

HAKUSANKIKO CO., LTD.

CHIP CONVEYOR LINE

PRODUCTS CATALOG

HAKUSAN QUALITY

ALL OF OUR CONVEYORS AND COOLANT TANKS ARE CUSTOMIZED TO INDIVIDUAL CUSTOMERS' NEEDS

There are no "standard products" in our lines of chip conveyors and coolant tanks. We manufacture products according to customers' usage conditions and the installation environment.

HAKUSANKIKO CO., LTD. began manufacturing chip conveyors in 1982. In accordance with the progress of machining tools and processing technology, the requirements for the functions and performance of chip conveyors have changed greatly and we have been constantly engaged in product development and improvement to respond to these changes. We have long been recognized as a leading chip conveyor manufacturer thanks to our track record and know-how accrued over forty years, skilled engineers, and our all-in-one facility and production management system for integrated planning and manufacturing. We can also be relied on to solve any issues regarding chips and coolant.

Product Warranty and After-sales Service

Our products are provided with a one-year warranty. We respond to any malfunction or trouble attributable to us free of charge during the warranty period. After the warranty period, we will deal with your issue in an honest and professional manner.



QR code for accessing product information

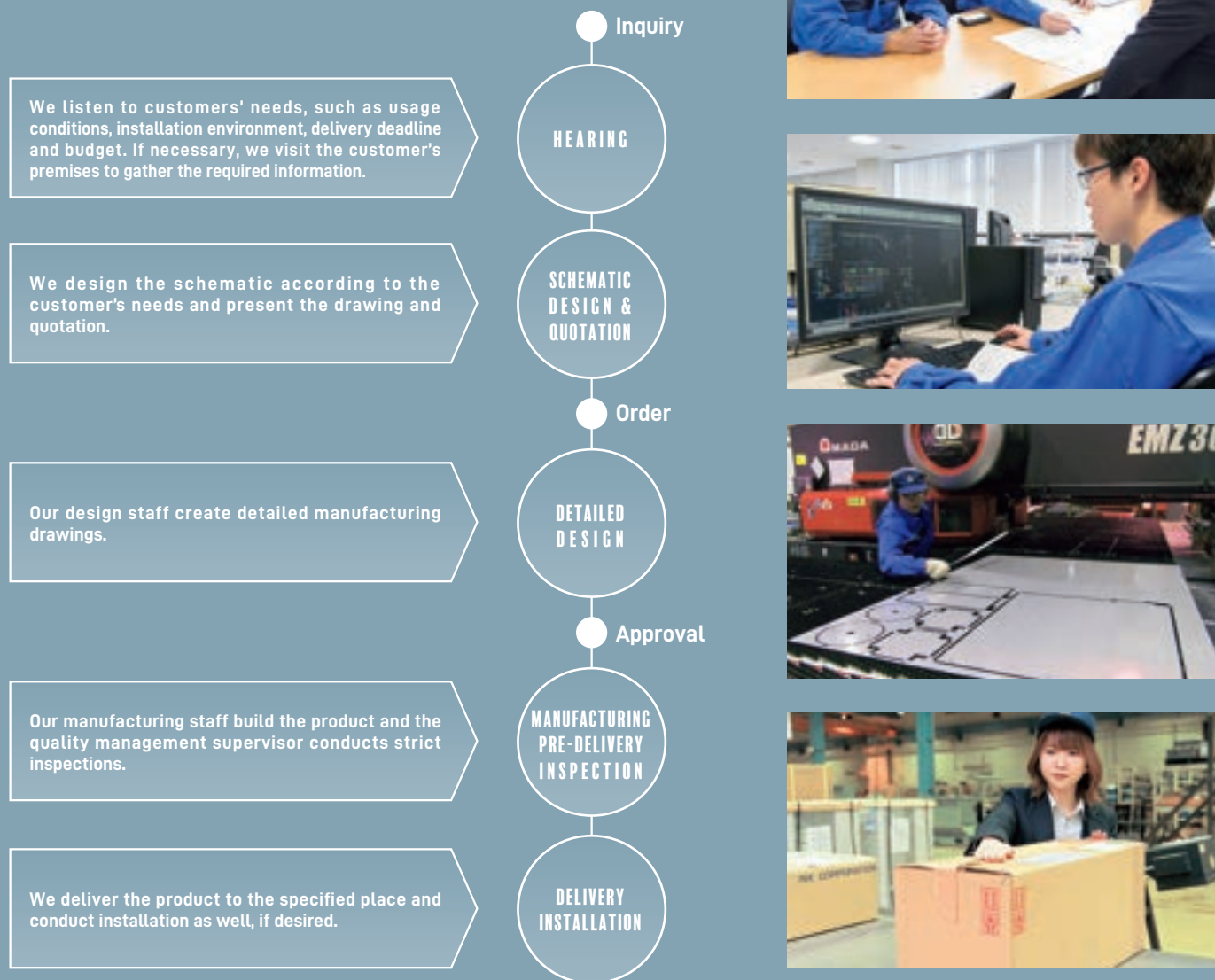
Scan the QR code with your smartphone to access the website for detailed product information.

*QR code is a registered trademark of DENSO WAVE Incorporated.



WORK FLOW

FROM INQUIRY TO DELIVERY



HAKUSANKIKO CHIP CONVEYOR LINE PRODUCTS INDEX

CHIP CONVEYORS

For long chips or tangled chips



FLOOR CONVEYOR

P.06



Chip conveyors that transfer long chips or press scraps on hinge plates

For small chips



SCRAPER CONVEYOR MAGNETIC SCRAPER CONVEYOR

P.07

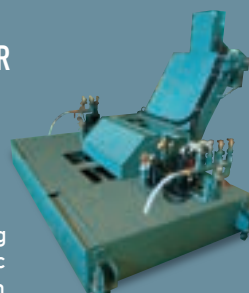
Chip conveyors with simple structures that transfer small chips using scrapers



DRUM FILTER CONVEYOR

P.08

Chip conveyor incorporating a filter for non-magnetic chips such as aluminum chips



For mixtures of long and small chips



TWO-STAGE CONVEYOR

P.09

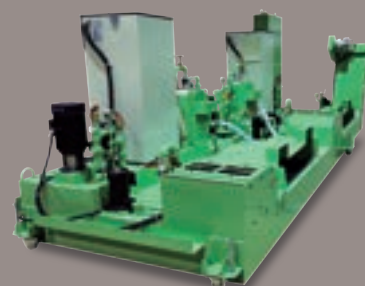


Multi-use chip conveyor for various types of chips

COOLANT UNIT

COOLANT TANK COOLANT UNIT

P.14



COOLANT FILTRATION SYSTEM

MACMAG Magnetic separator

P.16



MACSPIN Cyclone separator

P.17



OIL SKIMMER

MACSKIMMER Oil skimmer

P.16



MAGNETIC ROLLER CONVEYOR

P.10

Chip conveyors that transfer magnetic chips via attraction to multiple magnetic rollers



COIL CONVEYOR SCREW CONVEYOR

P.11

Space-saving chip conveyors with simple structures that can be installed in small spaces such as inside machining tools



CHIP BUCKET

P.13



+

MAGNETIC CONVEYOR

P.10

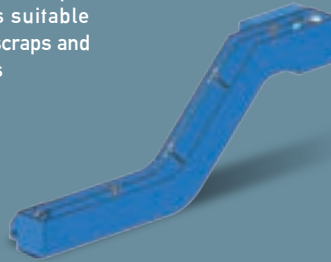
Chip conveyors that transfer magnetic chips via attraction to magnets on the reverse side of the conveyor



SIDE-ARM SCRAPER CONVEYOR

P.12

Cantilevered scraper conveyors suitable for press scraps and large chips



BUCKET LIFTER

P.13



FOR LARGE PLANTS

CENTRALIZED CONVEYOR SYSTEM

P.18

A centralized transfer system to transfer chips discharged from multiple machines and accumulate them in one place using conveyors



PUMP BACK SYSTEM

P.19

A centralized filtration system to filter chips and coolant discharged from multiple machines using a large filtration device

Patented



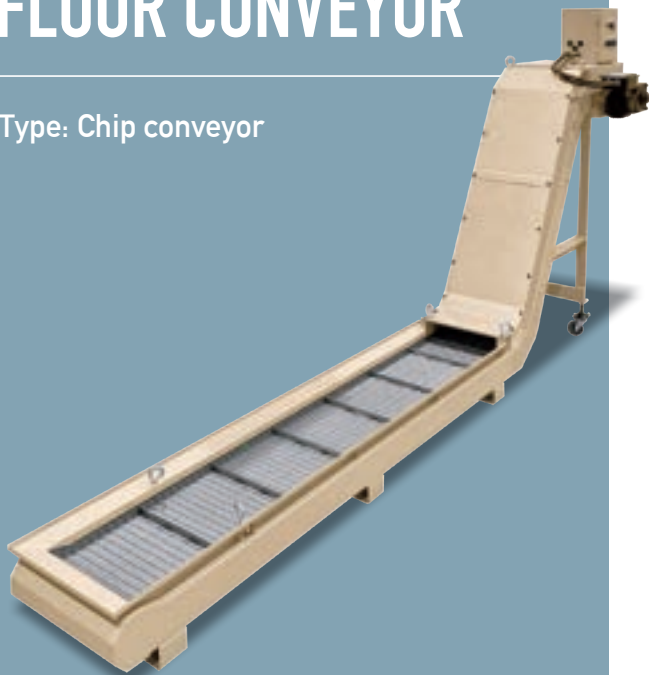
Required functions and performance vary depending on customers' processing conditions and usage environments. We provide various products and optional units in addition to the products in this catalog. Please contact us if you have any questions. We will recommend optimal products for your situation, based on our experience and track record.





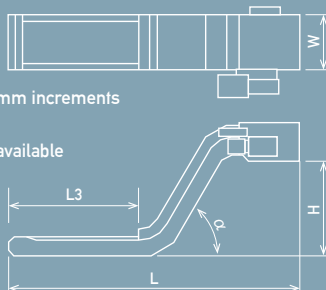
FLOOR CONVEYOR

Type: Chip conveyor



Outline drawing

W: From 200mm with 50mm increments
 α : 45°, 60° recommended
Straight type ($\alpha=0^\circ$) also available



Chip shape



Long curl



Long wire



Tangled chips

Chip length

50 mm or more

Chip material

Iron, cast-iron,
non-magnetic metals

Safety device

Protect relay

*Torque limiter + limit switch and torque limiter
+ proximity switch are also available

Option

Control panel
Coolant returner
Brush/ Stop plate

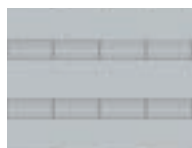
CE marking control panels are also available
Collects coolant attached to chips
Prevents chips from returning from the
discharge port to the conveyor
Super-hardened rails for improving durability

Standard chip conveyors with hinge plates Suitable for long chips and tangled chips

CONVEYOR TYPES

Conveyor type	Chain pitch	Hinge plate thickness	Appropriate uses
Type 50	31.75mm	2.3mm	For small machines
Type 80	50.80mm	3.2mm	For mid-sized and large machines
Type 150	150.00mm	4.5mm	For large plants

HINGE PLATE TYPES



Standard
Standard type with
flat plates



Dimple
Plates with small
protrusions suitable
for transferring
plate-shaped scraps



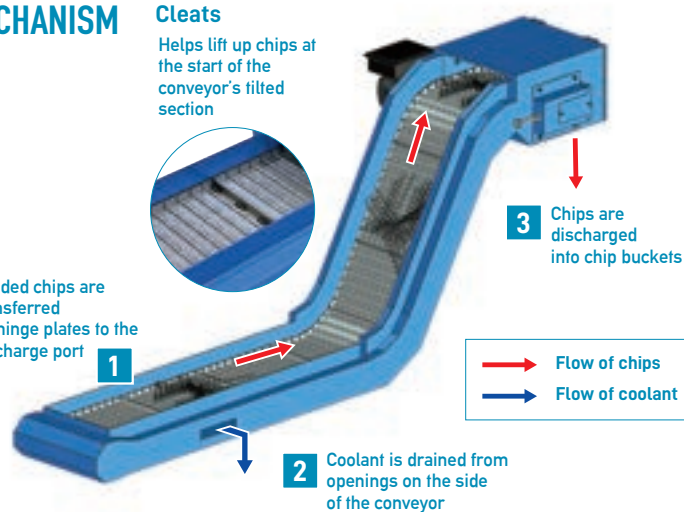
Perforation
Plates with small
holes suitable for
when there are large
amounts of coolant

MECHANISM

Cleats

Helps lift up chips at
the start of the
conveyor's tilted
section

Loaded chips are
transferred
on hinge plates to the
discharge port



→ Flow of chips
→ Flow of coolant

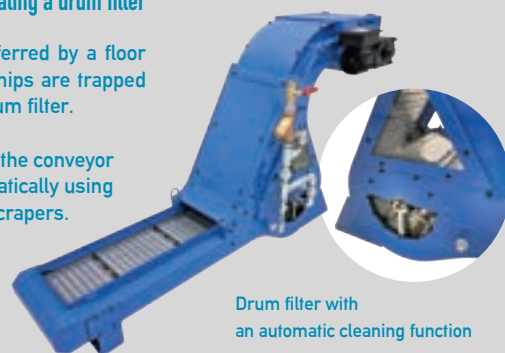
VARIATION

EX FLOOR

Floor conveyor incorporating a drum filter

Long chips are transferred by a floor
conveyor and small chips are trapped
by an incorporated drum filter.

Chips collected inside the conveyor
are discharged automatically using
uniquely-structured scrapers.



Drum filter with
an automatic cleaning function



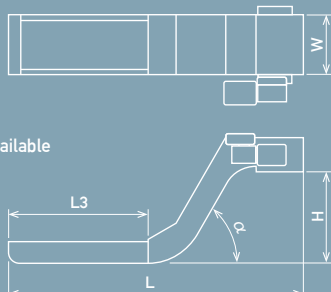
SCRAPER CONVEYOR MAGNETIC SCRAPER CONVEYOR

Type: Chip conveyor



Outline drawing

W: From 200mm
with 50mm increments
 α : 45°, 60° recommended
Straight type ($\alpha=0^\circ$) also available



Chip shape



Short curl



Small chips



Granular

Chip length

See conveyor types
(right)

Chip material

Iron, cast-iron,
non-magnetic metals

Safety device

Protect relay

*Torque limiter + limit switch and torque limiter
+ proximity switch are also available

Option

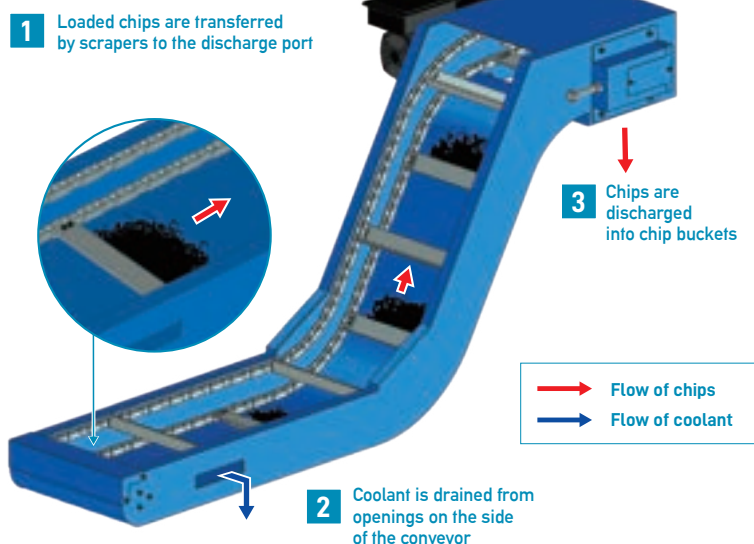
Control panel	CE marking control panels are also available
Coolant returner	Collects coolant attached to chips
Wedge wire	Prevents outflow of small chips
Magnetic scraper	Improves the collection rate of magnetic chips

**Chip conveyors with simple structures
that transfer chips using scrapers**
Suitable for transferring small iron
and cast-iron chips

CONVEYOR TYPES

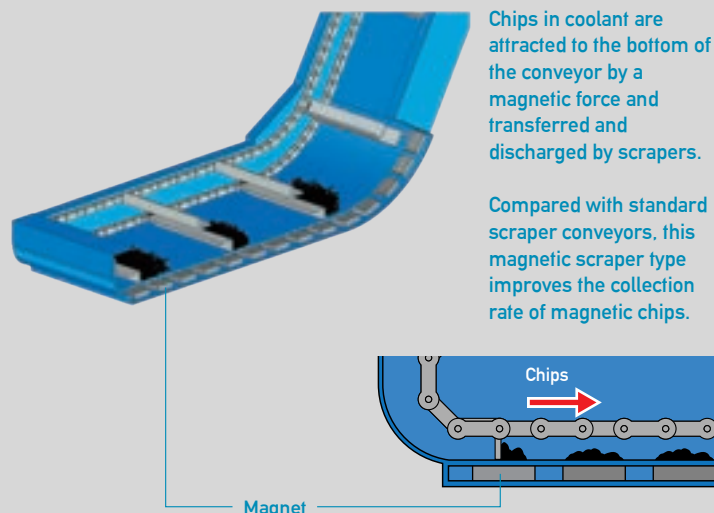
Conveyor type	Chain pitch	Chip length	Appropriate uses
Type 50	31.75mm	less than 30mm	For small machines
Type 60	38.10mm	less than 50mm	For mid-sized machines
Type 80	50.80mm	less than 75mm	For large machines
Type 150	150.00mm	less than 100mm	For large plants

MECHANISM



OPTION

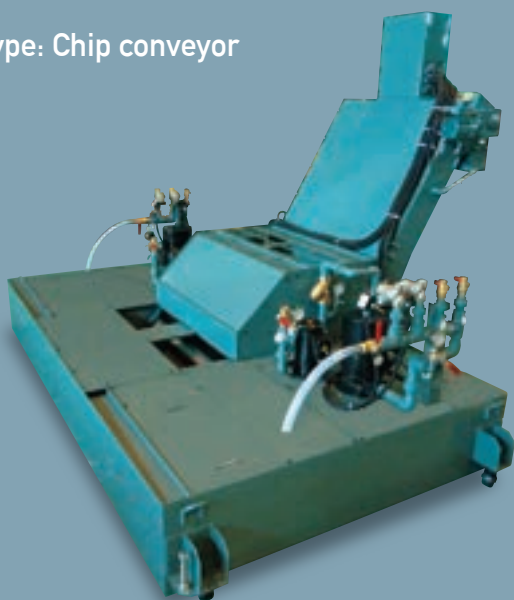
MAGNETIC SCRAPER





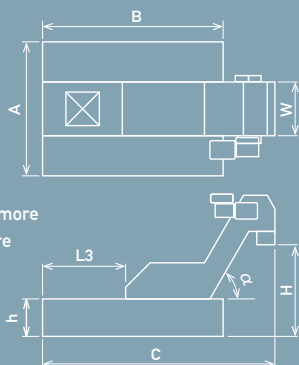
DRUM FILTER CONVEYOR

Type: Chip conveyor



Outline drawing

W: From 400mm
with 100mm increments
H: Standard drum: 280mm or more
Large drum: 400mm or more
 α : 60° recommended



Chip shape



Short curl



Small chips



Granular

Chip length

Less than **50mm**

Chip material

Iron, cast-iron,
non-magnetic metals

Safety device

Protect relay

*Torque limiter + limit switch and torque limiter
+ proximity switch are also available

Option

Control panel	CE marking control panels are also available
Coolant returner	Collects coolant attached to chips
Magnetic scraper	Improves the collection rate of magnetic chips

Scraper conveyors with filters incorporated for non-magnetic chips such as aluminum chips

FILTER MATERIALS



Screen mesh filter

Mesh filters are attached to each side of a polygonal drum. Each filter can be replaced when clogged or broken.

Material: Nylon, stainless steel mesh
Mesh density: 80, 110, 200 (mesh)



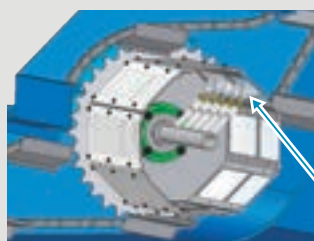
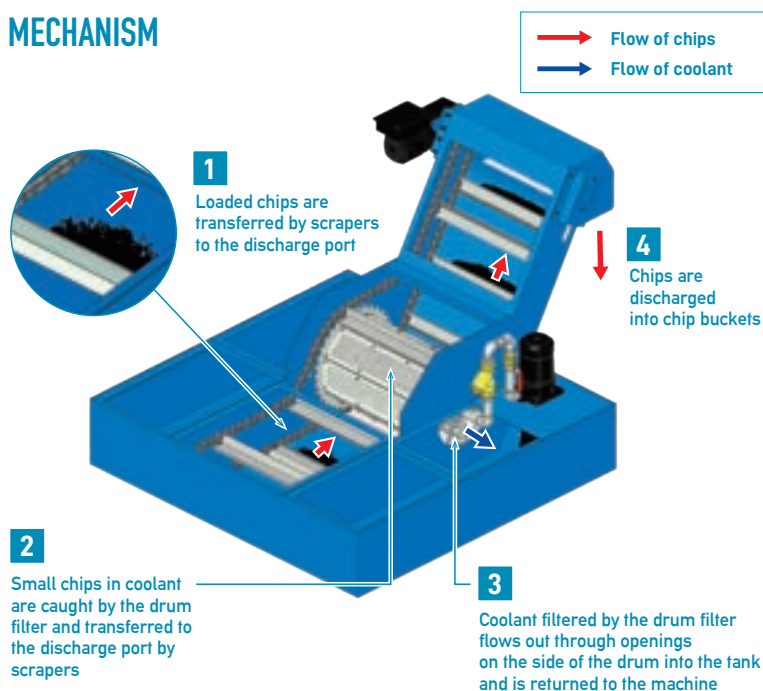
Notch wire filter

Patented

Metal notch wire is wound around a basket-shaped frame. This drum filter is suitable for use in harsh environments which may cause breakage or damage of screen mesh filters.

Material: Thin stainless steel wire
Mesh density: 100 mesh (when converted to mesh)

MECHANISM



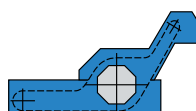
Automatic filter cleaning mechanism

Clean coolant inside the tank is sucked up by a pump and sprayed on the filter from inside the drum in order to dislodge small chips attached to the filter and prevent filter clogging

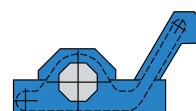
Coolant is sprayed from the nozzles

DRUM POSITION

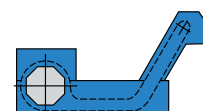
The drum position can be changed according to the installation environment



Standard drum type



Center drum type

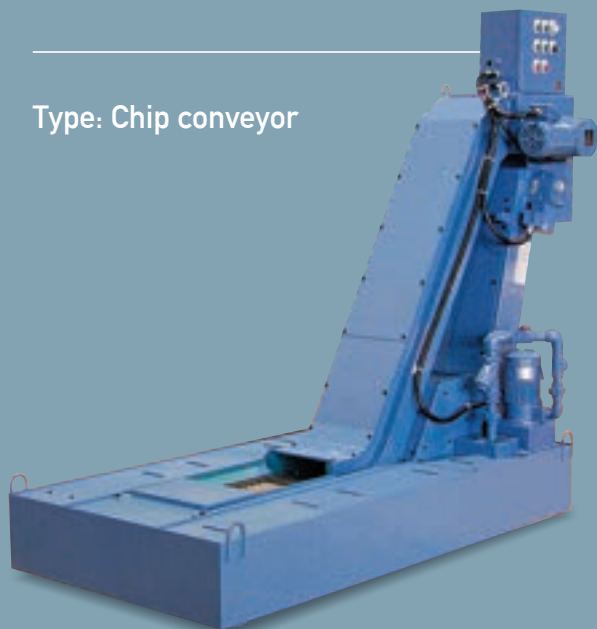


Tail drum type



TWO-STAGE CONVEYOR

Type: Chip conveyor



Chip shape



Long curl



Long wire



Tangled chips



Short curl



Small chips



Granular

Chip length

Mixtures of
long and small chips

Chip material

Iron, cast-iron,
non-magnetic metals

Safety device

Protect relay

*Torque limiter + limit switch and torque limiter
+ proximity switch are also available

Option

Control panel	CE marking control panels are also available
Coolant returner	Collects coolant attached to chips
Brush/ Stop plate (upper conveyor)	Prevents chips from returning from the discharge port to the conveyor
Abrasion resistance (upper conveyor)	Super-hardened rails for improving durability
Magnetic scraper (lower conveyor)	Improves the collection rate of magnetic chips
Drum filter (lower conveyor)	Improves coolant filtration accuracy

Two-stage conveyors combining the advantages of floor conveyors and scraper conveyors Suitable for removing mixtures of long and small chips

MECHANISM

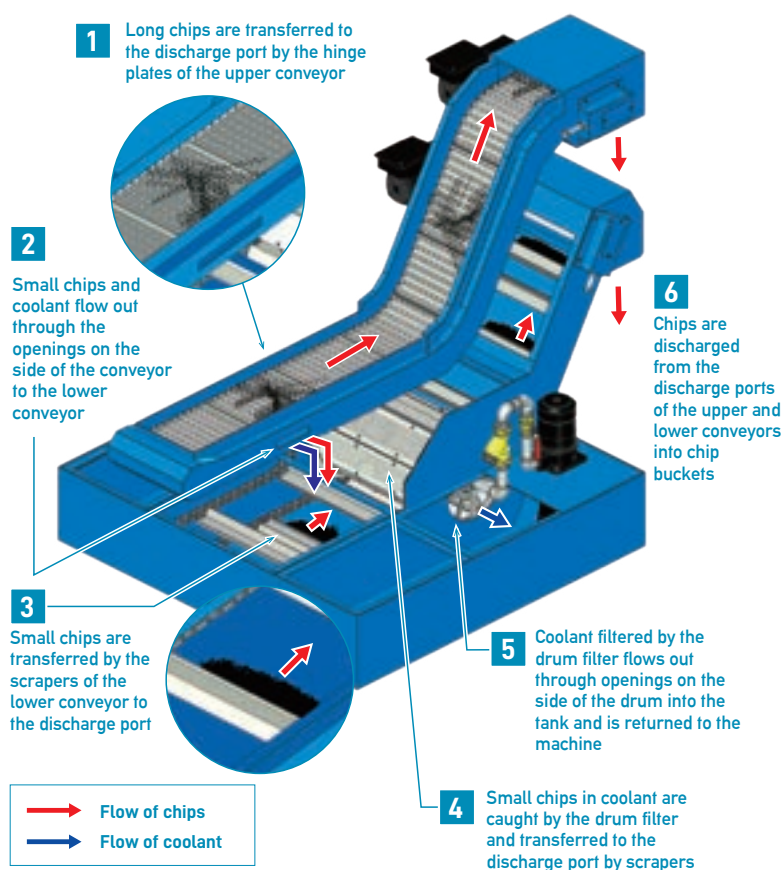
A two-stage conveyor combining a floor conveyor and scraper conveyor, which are suitable for transferring long chips and small chips respectively. It can remove mixtures of various shapes of chips reliably.

First the upper floor conveyor removes long chips and then the lower scraper conveyor removes any remaining small chips.

When high filtration performance for coolant is required, a drum filter can be incorporated into the lower scraper conveyor.

Two-stage conveyors with a drum filter

Two-stage conveyors with/without a drum filter are available



EXAMPLE





MAGNETIC ROLLER CONVEYOR

Type: Chip conveyor



Chip conveyors that transfer magnetic chips via attraction to multiple magnetic rollers

APPROPRIATE USES

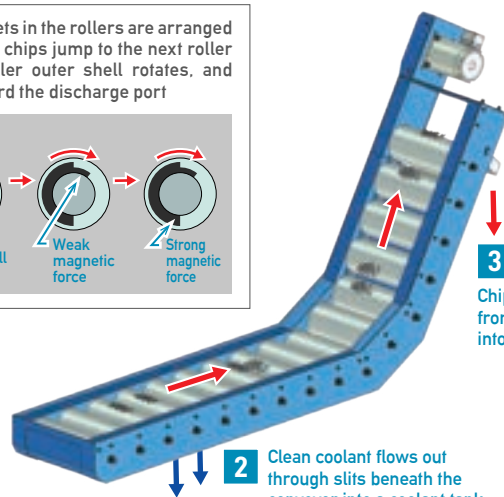
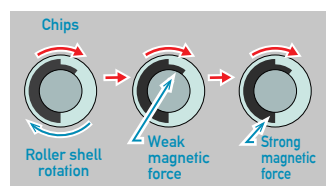
Transfer of the following iron and cast-iron chips:

- Needle-shaped chips from gear-cutting machines and broaching machines
- Scale-shaped chips from multi-axis machines and special-purpose machines
- Curled chips shorter than 100mm

MECHANISM

1 Chips are attracted to the surface of magnetic rollers due to magnetic force

The magnets in the rollers are arranged so that the chips jump to the next roller as the roller outer shell rotates, and head toward the discharge port



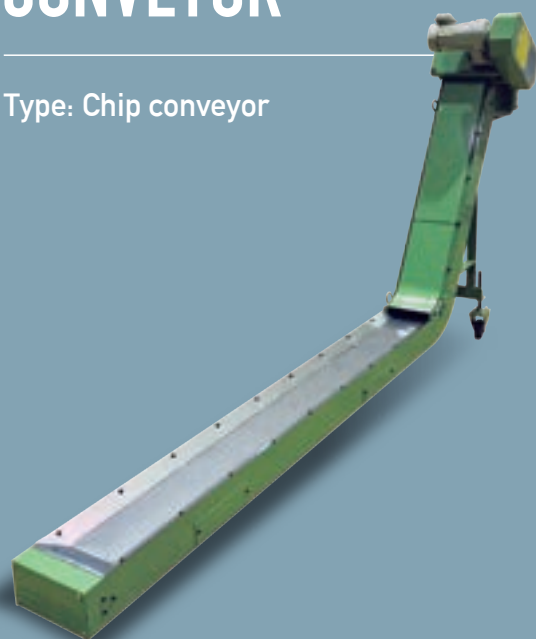
→ Flow of chips
→ Flow of coolant

3 Chips are discharged from the discharge port into chip buckets

2 Clean coolant flows out through slits beneath the conveyor into a coolant tank

MAGNETIC CONVEYOR

Type: Chip conveyor



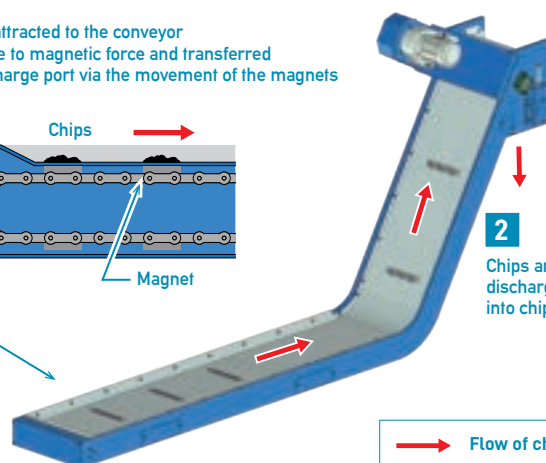
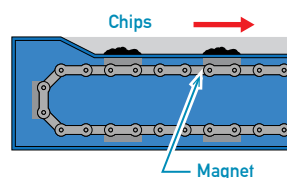
Chip conveyors that transfer magnetic chips via attraction to magnets on the reverse side of the conveyor

APPROPRIATE USES

Transfer of small iron and cast-iron chips

MECHANISM

1 Chips are attracted to the conveyor surface due to magnetic force and transferred to the discharge port via the movement of the magnets



→ Flow of chips

2 Chips are discharged into chip buckets



COIL CONVEYOR SCREW CONVEYOR

Type: Chip conveyor



Space-saving chip conveyors with simple structures that can be installed in small spaces such as inside machining tools

APPROPRIATE USES

- Installation inside machines
- Short-distance transfer in a small installation space

Coil conveyor mechanism

- Chips are transferred by the rotation of coils
- Suitable for long curled chips



In contrast to screw conveyors, coil conveyors have no shaft, meaning a large amount of coolant can flow through.

Screw conveyor mechanism

- Chips are transferred by the rotation of a spiral blade attached to a shaft
- Suitable for granular chips and short curled chips



In contrast to coil conveyors, screw conveyors have no open space at their center, transferring chips more efficiently with less return.

EXAMPLES

Push-out type

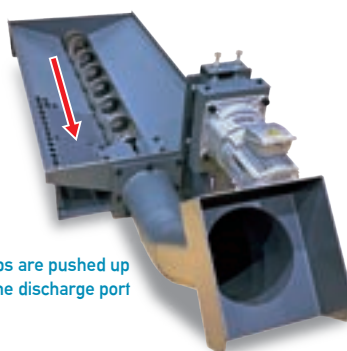


Chips are pushed out



Chip discharge side

Push-up type



Chips are pushed up to the discharge port

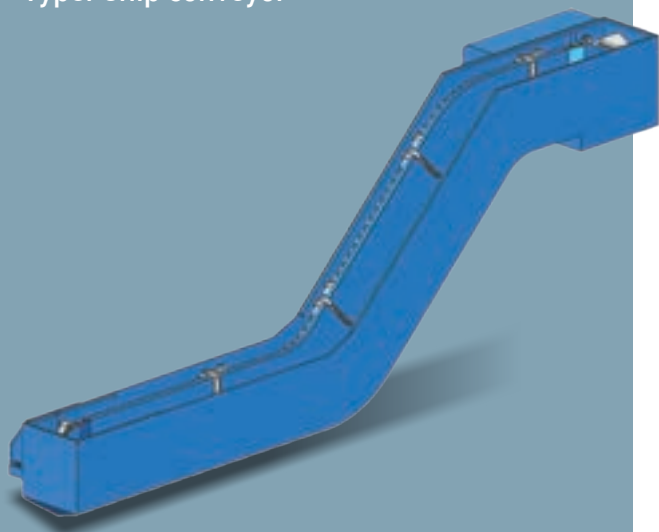


Discharge image



SIDE-ARM SCRAPER CONVEYOR

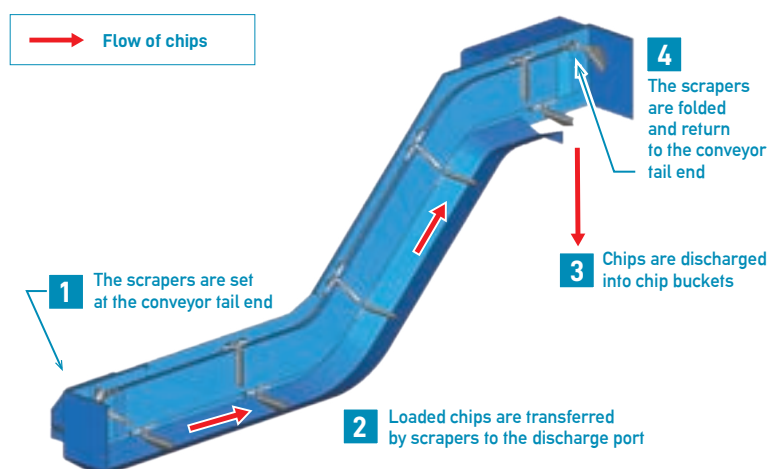
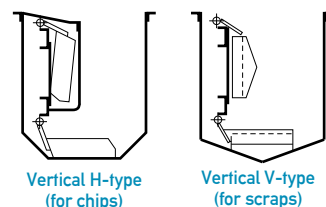
Type: Chip conveyor



Cantilevered scraper conveyors suitable for the transfer of press scraps and hard chips from large machines and for long-distance transfer in plants

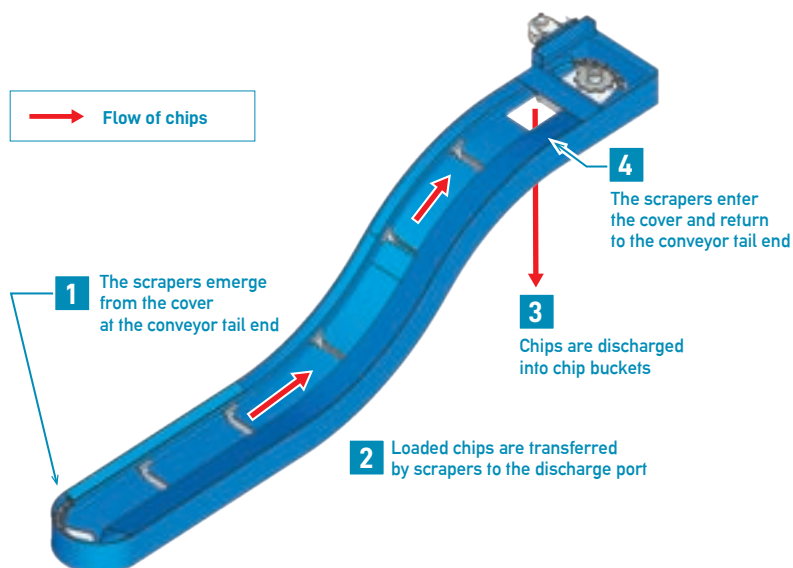
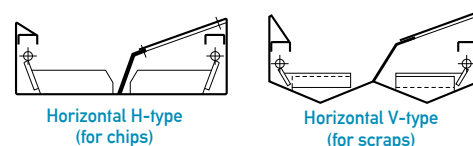
VERTICAL TYPE

Scrapers return to the conveyor tail end in a folded state, which doesn't interfere with chip loading or transfer. Two types of scrapers are available: the H-type and V-type, which are suitable for transferring chips and scraps, respectively.



HORIZONTAL TYPE

Scrapers return to the conveyor tail end by moving under the cover. H-type and V-type scrapers are suitable for transferring chips and scraps, respectively.





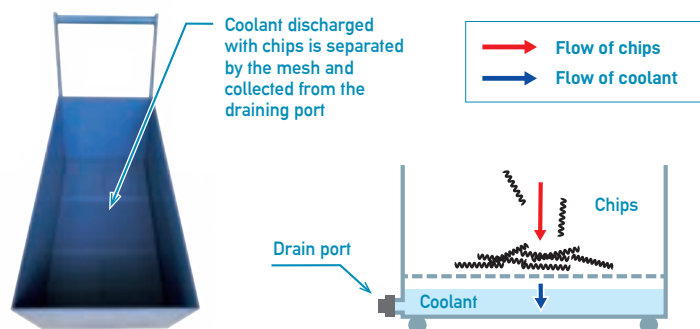
CHIP BUCKET

Type: Chip conveyor peripheral equipment



Various chip buckets are available,
from small to large

DRAINAGE MECHANISM



VARIATION

TILTING CHIP BUCKET



Step on the foot pedal to
tilt the bucket forward,
making chip disposal easy



BUCKET LIFTER

Type: Chip conveyor peripheral equipment



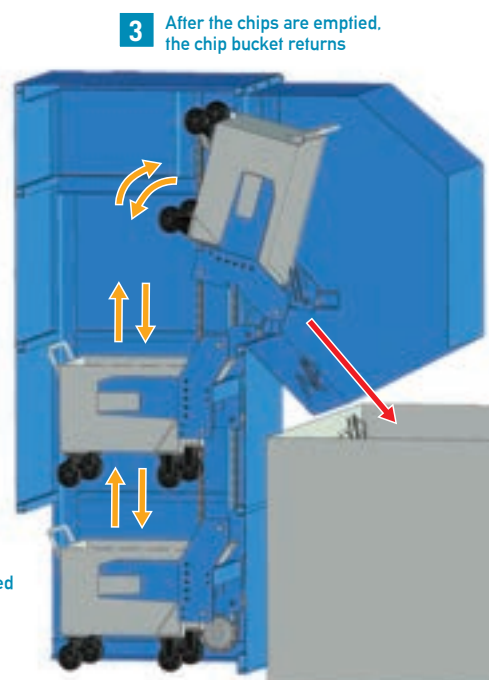
Chips are collected automatically
simply by inserting chip buckets

MECHANISM



2 The chip bucket is lifted

1 Insert a chip bucket designed
for use in the bucket lifter



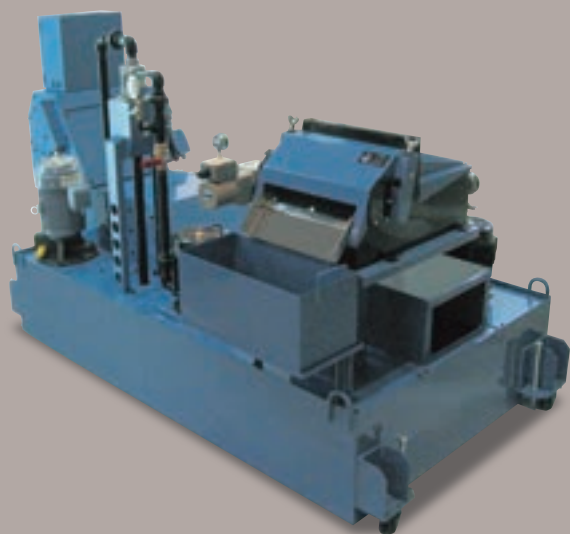
3 After the chips are emptied,
the chip bucket returns

Orange arrow = Bucket motion
Red arrow = Flow of chips



COOLANT TANK COOLANT UNIT

Type: Coolant processor



OPTION

- MACSKIMMER Oil skimmer ▶ P.16
- MACMAG Magnetic separator ▶ P.16
- MACSPIN Cyclone separator ▶ P.17
- Coolant pump
- Level gauge
- Oil cooler
- Bottom sludge collection system ▶ P.15
- Coolant collection bucket system ▶ P.15

Other optional units are also available according to customers' needs

Custom coolant tanks and coolant units are available according to customers' needs, such as coolant type, handling amount, installation space, etc.

We select optimal peripheral equipment for our customers, such as coolant filtration systems and oil skimmers

EXAMPLES

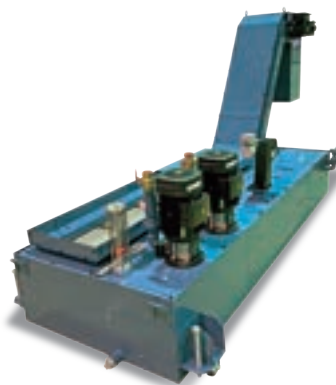
Coolant tank



High-pressure coolant tank



Conveyor with tanks



Centralized coolant unit



Coolant unit for large cleaning machines



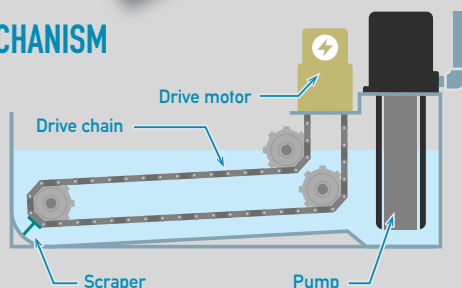
OPTION

Bottom sludge collection system (BSS)

Sludge accumulated at the tank bottom is collected by a scraper and sucked up by a pump. Troublesome cleaning work can be conducted automatically.



MECHANISM



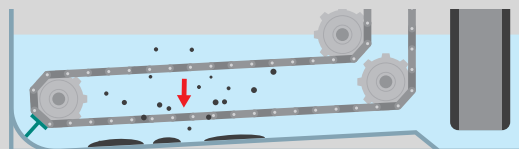
Reciprocating conveyor advantage

The scraper travels along the tank bottom, allowing for unhindered pump installation.

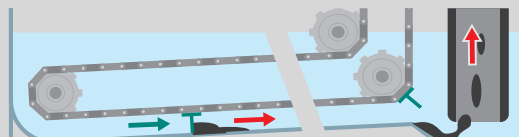
MOTION

→ Flow of sludge
→ Scraper motion

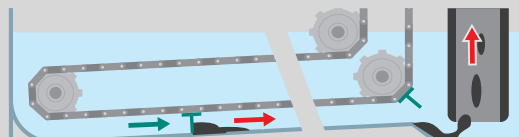
1 Sludge accumulates at the tank bottom



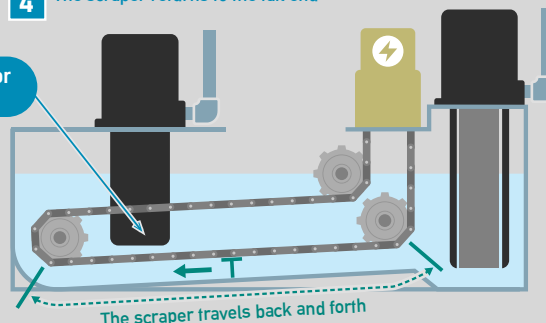
2 Sludge is transferred by the scraper toward the pump



3 Sludge is sucked up by the pump



4 The scraper returns to the tail end



OPTION

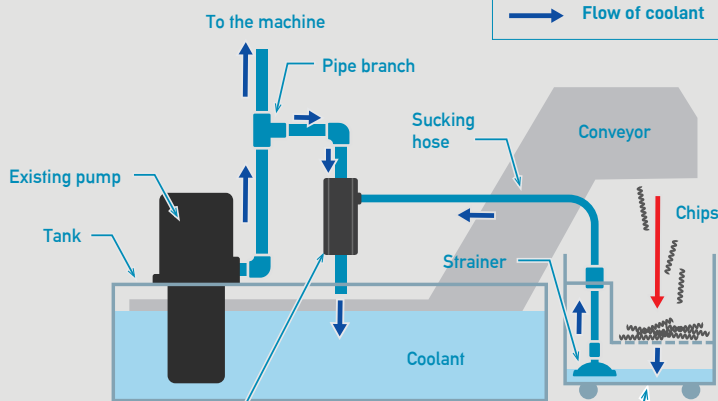
Coolant collection bucket system

Coolant unloaded together with chips from the conveyor into the bucket is collected automatically. The coolant is sucked up using the tank's existing pump; therefore, the system can be connected to existing equipment.



MECHANISM

→ Flow of sludge
→ Flow of coolant



Ejector

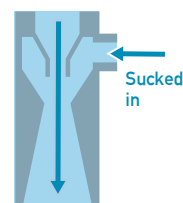
The sucking hose is connected to the ejector, which sucks up coolant from the bucket using the same mechanism as a spray gun.

Specialized bucket

The strainer at the bucket bottom sucks up coolant

Ejector mechanism

The coolant flow area is sharply narrowed to increase flow velocity and decrease pressure, thus coolant is drawn in via the sucking hose.





MACSKIMMER

Oil skimmer

Type: Oil skimmer

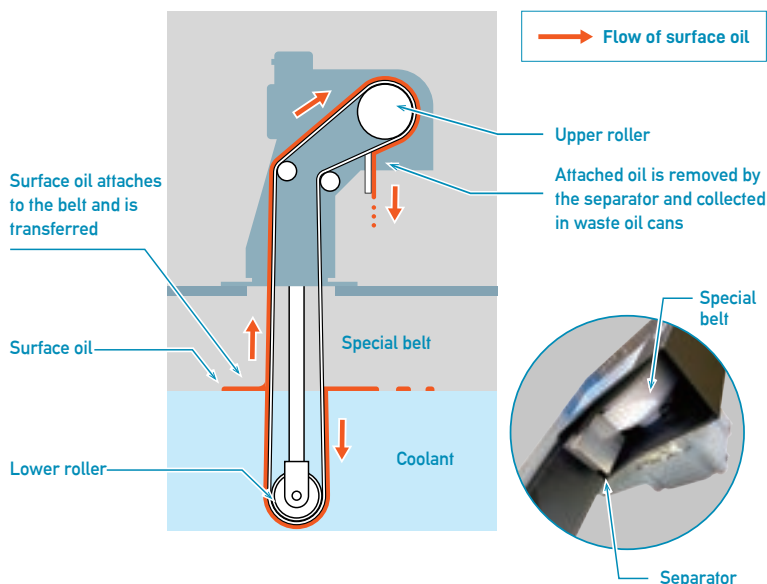


For oil skimming of various coolant tanks

OIL SKIMMING PERFORMANCE

Model	Performance	Feature
HOS-25	Max. 10L/h	Standard type
HOS-75	Max. 50L/h	Large type

MECHANISM



MACMAG

Magnetic separator

Type: Coolant filtration system



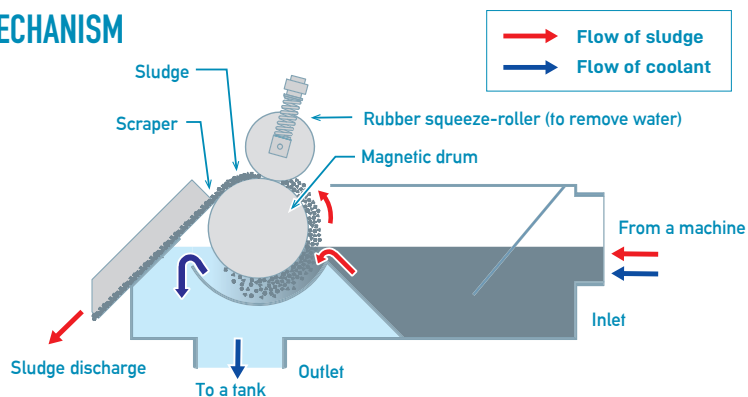
Suitable for the removal of iron chips from grinders

PROCESSING FLOW RATE

Type (※)	Water-soluble coolant	Processing flow rate (L/min)		
		Oil-based coolant / Viscosity (mm ² /s)		
		10	20	30
MHK(MHF)- 4	40	30	20	10
MHK(MHF)- 6	60	50	40	30
MHK(MHF)- 8	80	60	50	40
MHK(MHF)- 12	120	100	80	60
MHK(MHF)- 18	180	140	110	80
MHK(MHF)- 24	240	180	150	110
MHK(MHF)- 36	360	280	230	170
MHK(MHF)- 50	500	380	310	230
MHK(MHF)-100	1000	750	620	480

※ MHK-□□: High magnetic force type MHF-□□: Standard type

MECHANISM





MACSPIN

Cyclone separator

Type: Coolant filtration system



Foreign materials in the coolant are separated by centrifugal force with high precision

PROCESSING FLOW RATE

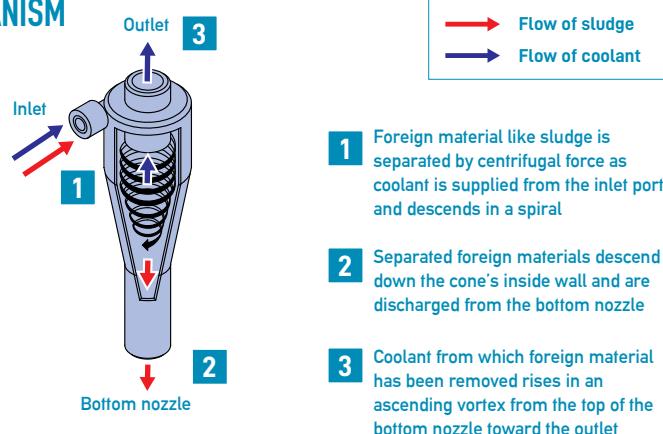
Type	Processing flow rate	Separation precision
30 LW	22~30L/min	20μm 90%
50 LW	32~50L/min	
70 LW	50~75L/min	
100 LW	65~100L/min	
200 VL	180~205L/min	
300 VL	275~300L/min	

※ The processing flow rate varies depending on conditions such as coolant type and temperature
※ Separation precision varies depending on the inflow pressure

USAGE CONDITIONS

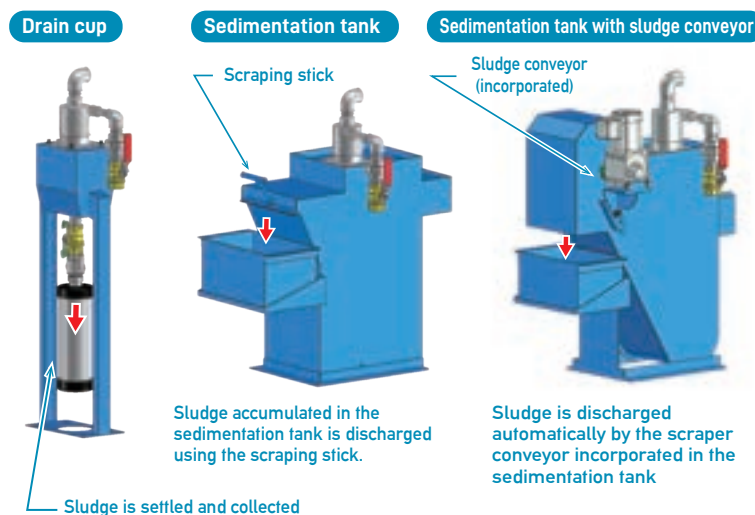
Coolant type	Water-soluble cutting fluids and grinding fluids (not usable with oil-based coolants)
Granule type	Cast metal granules, abrasive granules, iron grinding granules, etc.
Granule specific gravity	Specific gravity difference from fluid of 2.7 or more
Granule diameter	500μm or less (preprocessing required)
Inflow pressure	0.2MPa~0.3MPa
Inflow rate	Max. processing flow rate × 1.2 or more

MECHANISM



FOREIGN MATERIAL COLLECTOR (OPTION)

Equipment for collecting foreign material discharged from the bottom nozzle

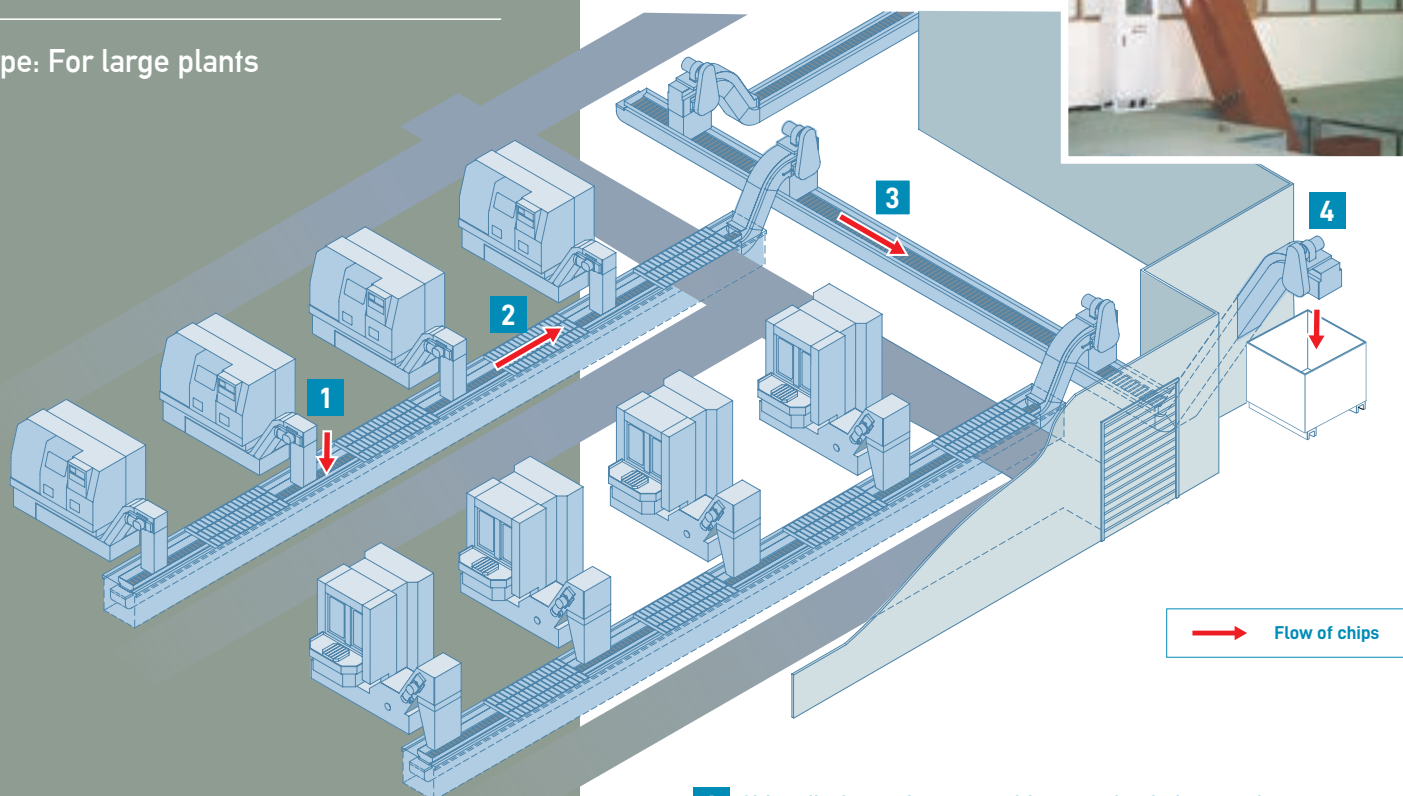




CENTRALIZED CONVEYOR SYSTEM

Type: For large plants

A centralized transfer system to transfer chips discharged from multiple machines and accumulate them in one place using conveyors



- 1 Chips discharged from machines are loaded onto relay conveyors
- 2 Relay conveyors transfer chips to the posterior conveyors
- 3 Chips are relayed in sequence
- 4 Finally, chips are discharged into a common bucket



EFFECTIVENESS OF INTRODUCING THE SYSTEM

Before	After
Chip buckets required for each machine	Chip buckets not required for individual machines
Chips collected from each machine by workers	No workers required
Chips collected from machines are transported to the final bucket by workers	No workers required

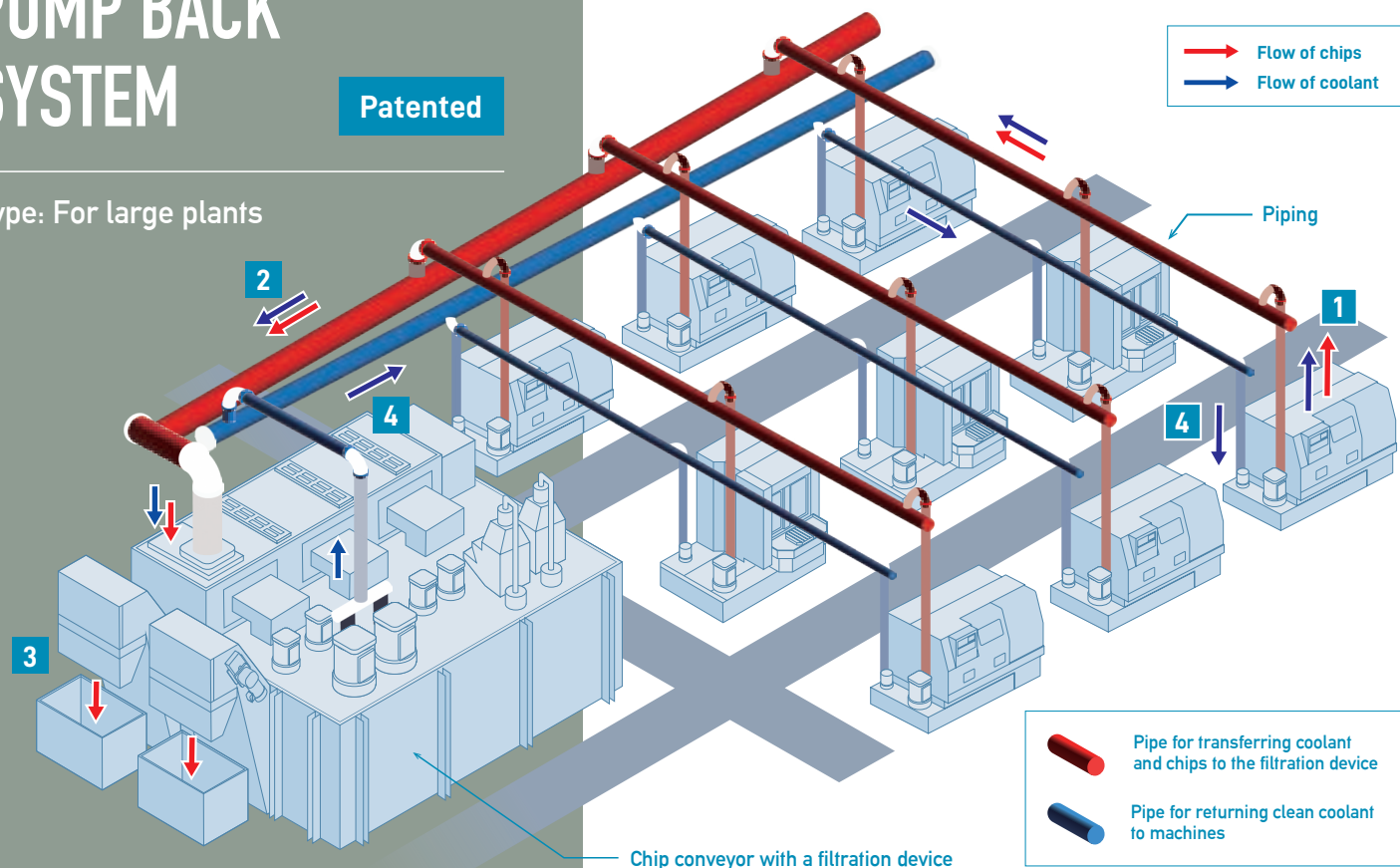


PUMP BACK SYSTEM

Patented

Type: For large plants

A centralized filtration system to filter chips and coolant discharged from multiple machines using a large filtration device



- 1 Chips and coolant discharged from machines are sucked up together using a vortex pump
- 2 Coolant containing chips is transferred to the filtration device via pipes
- 3 Coolant filtered and chips discharged from the filtration device
- 4 Clean coolant returned to machines via pipes

EFFECTIVENESS OF INTRODUCING THE SYSTEM

Before	After
Chip conveyors and coolant units required for each machine	All coolant filtered using a single large filtration device
Chips collected from each machine by workers	No workers required
Coolant management necessary for each machine	Centralized coolant management possible
Each machine requires space for conveyor and tank installation, restricting layout options	Flexible layout possible
Pit construction may be required for conveyors or gutters	Pit construction not necessary since pipes are used





Imagine & Create

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