CHIP SOLUTIONS

CHIP CONVEYORS
CHIP DISC FILTERS (CDF)
CAST IRON CDF

HENNIG®
global excellence in machine protection

HENNIG CHIP SOLUTIONS

GLOBAL EXCELLENCE IN MACHINE PROTECTION

Chip conveyors have been a core competency at Hennig for nearly three decades. Today, our state-of-the-art chip conveyors and disc filtration systems set the standard for removing chips and debris from machine coolant, improving the life of precision machines and the accuracy of output. They are supported world-wide with Hennig's global sales and support infrastructure, which includes facilities and partnerships throughout the industrialized world. Hennig conveyors get the job done. That's why many of the biggest names in metalworking around the world rely on Hennig to protect their machines.

HENNIG, INC. HAS SOLUTIONS FOR ALL KINDS OF METAL CHIPS

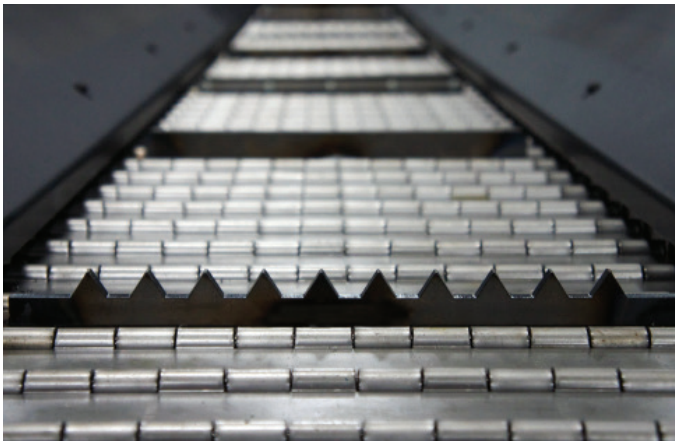
HENNIG, INC. WORLDWIDE HEADQUARTERS - MACHESNEY PARK, IL

IMPROVING EFFICIENCY

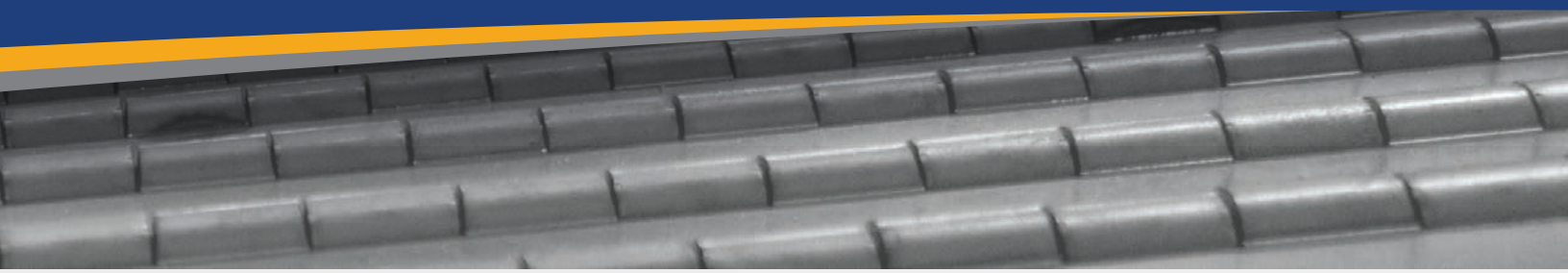
Hennig's expansive North American manufacturing facility uses state-of-the-art lasers, waterjets, CNC press brakes, and welding equipment to make high-precision sheet metal products quickly and efficiently, and our engineers use proprietary CAD technology which allows our conveyor designs to be evaluated, refined, and accurately built. Industry-leading best practices have resulted in the development of streamlined workflows and finely tuned assembly processes, ensuring that the cost, quality and delivery of Hennig conveyors are tightly controlled.

REDUCING MAINTENANCE

Better designed, better built. Hennig leads the industry in developing innovative new chip conveyor technologies, offering a complete range of chip conveyor solutions tailored to particular machine types, performance requirements, and work area considerations. Hennig chip conveyors outperform expectations, even in the most demanding production environments, and they do it more efficiently and with less maintenance than other conveyor solutions.



HINGE BELT MANUFACTURED BY HENNIG, INC.



CHIP CONVEYORS

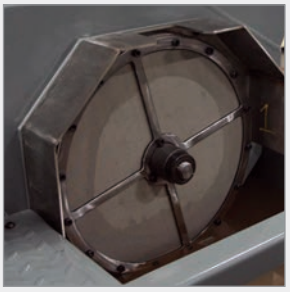
Efficient, dependable chip collection is the key ingredient in a well-run, efficient manufacturing environment. Hennig's custom conveyor solutions reduce machine maintenance and improve efficiency on the production floor. Hennig can design, build and deliver a chip conveyor solution for any machine or application challenge.

Our dual focus on design and manufacturing - all in-house - allows Hennig chip conveyors to outperform expectations, even in the most demanding environments, while requiring less maintenance. The end result: fewer repairs, fewer delays, greater tool life and more uptime. That's why so many machine tool builders worldwide have used and continue to use Hennig chip conveyors.

HENNIG CDF CHIP CONVEYOR

CHIP DISC FILTRATION (CDF)

Simple is better, especially when it comes to coolant filtration, where simple solutions are easier to operate and less expensive to maintain. That's the premise behind Hennig's innovative Chip Disc Filtration (CDF) technology. CDF technology was invented, designed and patented by Hennig for applications as fine as 25 microns, and is now available with our New Cast Iron Filtration option. Our CDF system combines durable, stainless steel coolant filtration media in a simple yet rugged design, providing an affordable and effective alternative to traditional drum filtration.



CDF DISC FILTER

CDF MAGNETIC DRUM FOR CAST IRON

HENNIG CHIP CONVEYORS

STANDARD 1.5" PITCH CHIP CONVEYORS

Hennig leads the industry in developing innovative chip conveyor technologies and applying them to the specific needs of machine tool manufacturers. Our custom conveyor solutions reduce maintenance and improve efficiency on the production floor.

FEATURES

1. Hennig chip conveyors are equipped with various types of overload detection devices that protect the conveyor from damage in the event of a jam.

2. High efficiency, heavy-duty gear motors power all Hennig chip conveyors. Various mounting configurations are available to suit individual requirements.

3. Hennig hinge belts consist of hinge plates, side wings, shafts, and cleats that are custom made from heavy-duty steel.

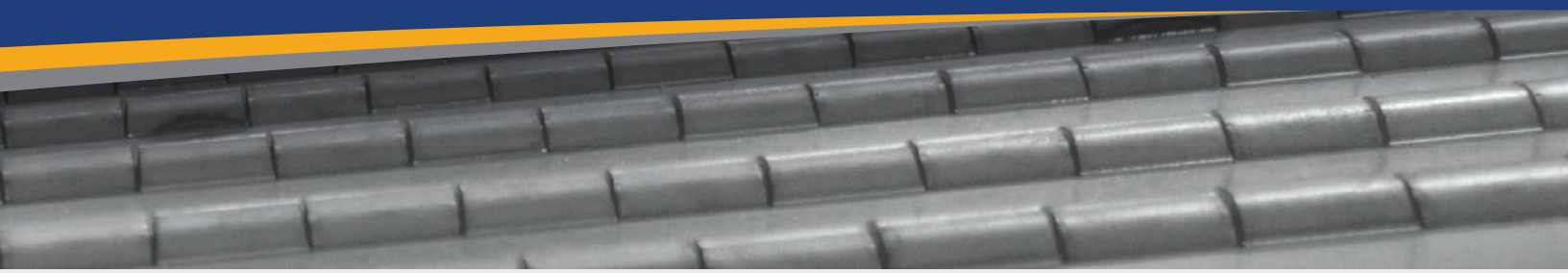
4. Hennig conveyor designs include a removable cover incline that allows easy access to the internal workings of the conveyor. Removing the cover is easy, so maintenance can happen fast.

5. Hennig's adjustable take-up mechanism is externally mounted for easy access and for the quick adjustment of belt tensioning.

6. Extra heavy-duty internal belt chain guides withstand the rigors of constant use and ensures nearly maintenance-free operation. This feature enables Hennig chip conveyors to work longer and harder, greatly reducing maintenance downtime.

7. Heavy-duty casters can be affixed to some Hennig chip conveyors, a helpful feature in environments where conveyors need to be moved or slid into a machine base.

8. Custom controls can be tailored to specific requirements.



HEAVY DUTY 2.5" PITCH STEEL BELT CHIP CONVEYORS

Hennig's 2.5" pitch belt conveyors can be made for most applications in the field when the standard 1.5" pitch belt is not effective for the situation. Hennig can provide the chip conveyor to remove chips or scrap pieces, to meet your requirements.

AVAILABLE WIDTHS

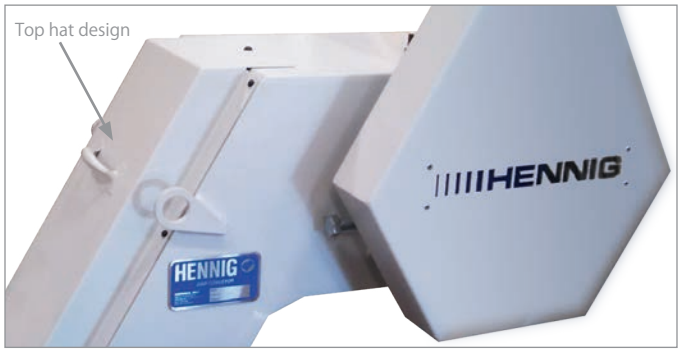
Conveyors can be manufactured in widths from 8.25" to 80" wide. The belt hinge is designed as one continuous piece.

IMPACT PLATES

Hennig recognizes the special requirements needed when designing a parts conveyor where direct loads contact the belt. Impact plates are just one of the many options considered when customizing a conveyor for these applications.

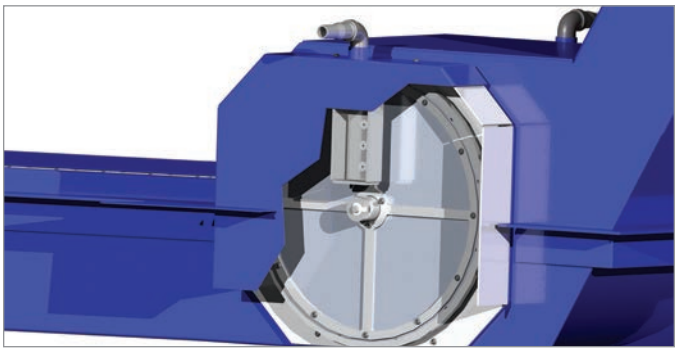
INCLINE COVERS

Chip volumes can also vary between applications. In addition to serrated cleats and a stripper bar, special incline covers (top hat design) can be included when larger amounts of stringy/balled chips are to be evacuated from your machine.



INTEGRATED CHIP DISC FILTRATION (CDF)

Hennig offers complete filtration systems when needed. Our CDF systems can also be used with the 2.5" pitch conveyor. These can filter down to 25 microns of filtration and additional bag filters or cyclonic filters would be included to achieve cleaner through-spindle requirements on many applications.



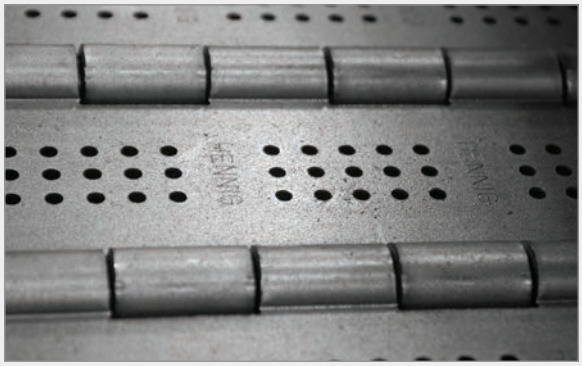
HENNIG CHIP CONVEYORS

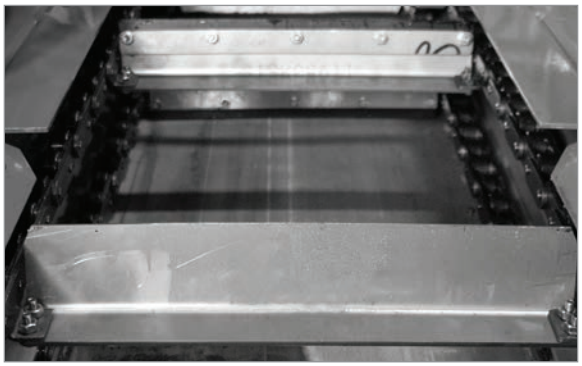
THREE COMMON FORMATS

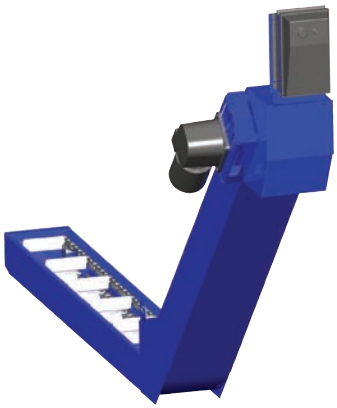
Most shop applications can be satisfied with hinge belt, scraper, or magnetic type conveyors. Hennig specializes in all, using the same quality control measures across design and production. Hennig can also provide you with a custom conveyor able to meet the needs of virtually any application.

HINGE BELT

Hinge belt chip conveyors, the most common format, offer an effective means of managing heavy chip loads and stringy chips. Chips that fall from the machine tool land on the conveyor belt and are conveyed away from the machine tool's precision surfaces.





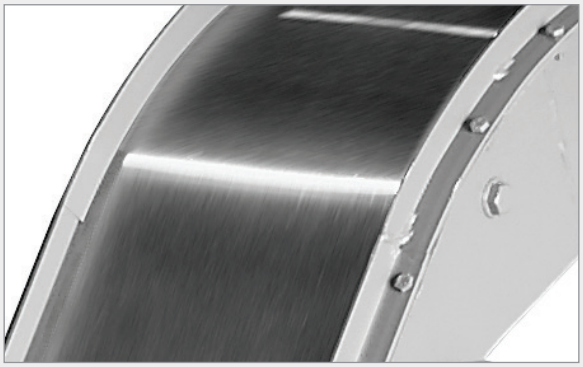


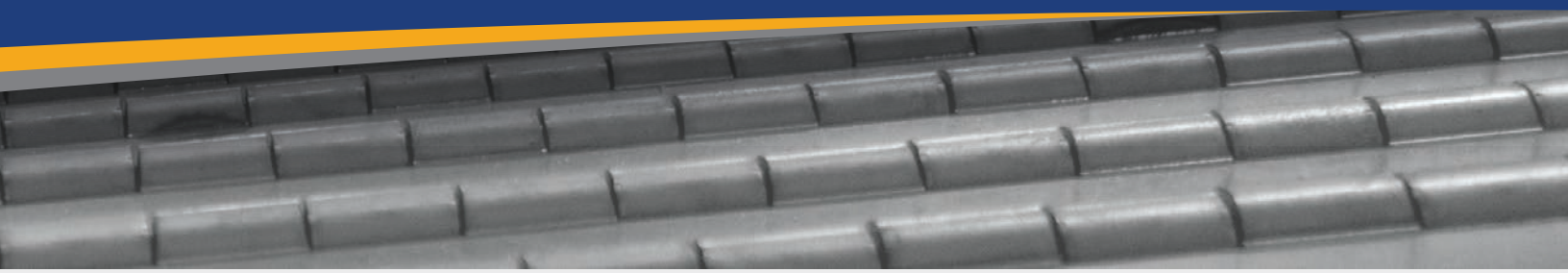
SCRAPER TYPE

Scraper type chip conveyors are most often used for cast iron, bronze or brass machining, which produce small chips. Chips fall directly to the bottom of the conveyor and scrapers drag debris to the discharge end of the conveyor.

MAGNETIC

Magnetic chip conveyors are intended for ferrous material applications with small chips. The chips fall onto the conveyor's stainless steel surface and are conveyed by powerful magnets moving underneath. The chips are released from the magnets at the discharge end and fall freely into a collection container.





HENNIG CONVEYORS SHARE THESE ATTRIBUTES

ADVANTAGES

- Chips are removed without interrupting production
- Hot chips are removed from the machine bed, reducing heat build-up
- Cutting area accidents are reduced by eliminating sharp chips
- Chips and coolant are separated automatically

CONSTRUCTION

- Low-profile design
- Heavy gauge steel body
- Rugged steel rails
- Overload/jam protection

COOLANT TANK (OPTIONAL)

- Integral design or separate unit

TECHNICAL DATA

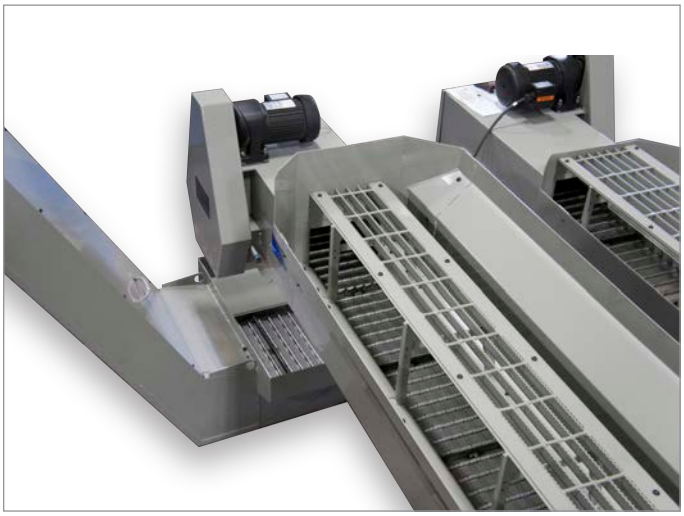
- Belt width: minimum 4" to 68" (maximum)
- Standard incline angles: 45°/60°
- Drive: 1/8 hp and larger inverter duty, direct or overhead drive assemblies
- Standard belt speeds: 1.6m/min, 2.2m/min, or 3.0m/min (variable speed available upon request)
- Power requirements: standard 220/440 VAC, 3-phase (other voltages available upon request)

PAINT

- Standard: grey or black textured powder coat (other colors and specs available on request)

CUSTOM CONVEYORS

Unique work environments. Specialized machine configurations. Varying chip volumes. These are just a few of the special requirements that indicate the need for a custom chip conveyor solution. Hennig engineers can create modified or special solutions to meet the needs of virtually any application. With Hennig, you get a chip solution that is tailored to your unique production environment and business needs.



CUSTOM CONVEYOR WITH PERPENDICULAR CHIP REMOVAL BELT

CHIP DISC FILTRATION (CDF)

SIMPLE OPERATION

LONG-LIFE MEDIA

QUICK MAINTENANCE

APPLICATION VERSATILITY

LESS DOWNTIME

These are just some of the innovative design parameters that drove the development of the Hennig Chip Disc Filtration (CDF) system.

THE SIMPLE APPROACH TO CHIP REMOVAL

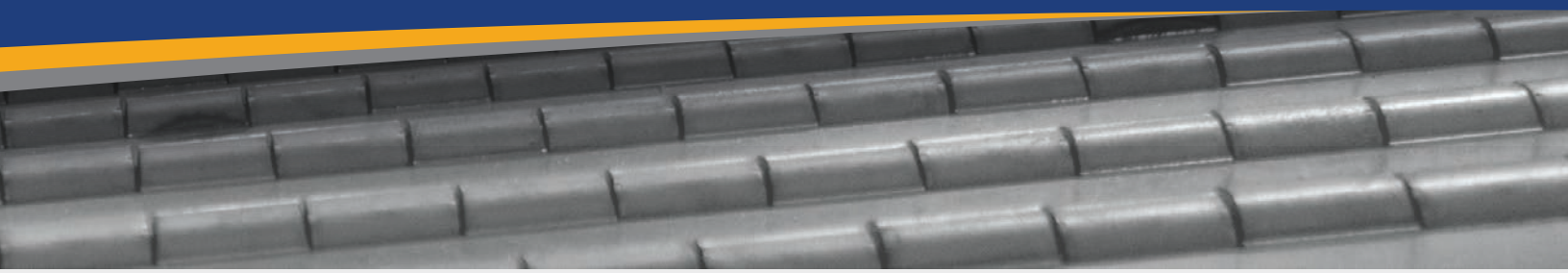
This affordable approach to chip removal is Hennig-designed and patent protected. It is the most simple approach to coolant filtration in the market today. The Hennig CDF system is simple by design, and can be used with a scraper type belt or a hinge belt. The conveyor belt transports chips and acts as the first stage of filtration. Disc filters with permanent media provide the second filtration stage. A coolant tank, low and high pressure pumps, float switches, oil skimmers and controls complete the standard configuration for fine chip applications.

THE AFFORDABLE ALTERNATIVE

Simpler design means fewer moving parts and easier maintenance. The end result is a disc filtration system that is affordable to buy, operate, maintain and own. No one works harder than Hennig to protect your investment in precision machines.

CDF FEATURES

1. Main flood coolant pumps.
2. High pressure pump (300-1000 psi) with bag filter.
3. Backwash CDF pump.
4. Disc access panels and backwash manifold.
5. Coolant tank.
6. Control box.



EFFECTIVE DESIGN

Innovative disc filtration - Patented disc filtration design provides a direct coolant flow path into the coolant tank reservoir and filters a wide variety of materials, both in water and oil based coolants.

Efficient coolant backwash - Continuous self-cleaning operation, no outside source such as steam or air is used.

Long-life media - Stainless steel media strength handles momentary or continuous heavy chip loads, which can be a problem with nylon mesh, drum-type filters.

Hinged belt conveyor - Provides Stage 1 filtration, catches and removes fine, broken and bushy chips.

Rotating disc - Provides Stage 2 filtration with permanent media.

Stainless steel screen - Rated at an industry-standard 25 microns filtration.

Low inlet height - External filtration discs allow for the lowest inlet height in the industry compared to drum-style filtration units.

FAST MAINTENANCE, LESS DOWNTIME

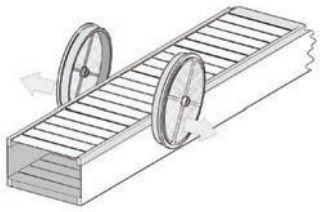
Easy media access - Typically just 20 minutes to remove the access panel and disc, install the new disc and secure the access panel.

Easy disc seal replacement - Typically about ten minutes.

Easy disposal - Old media is not hazardous waste, and can be discarded with chips.

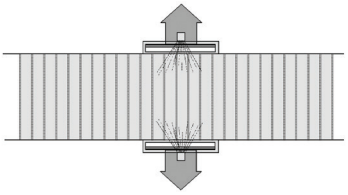
Affordable design - Disc design and construction keeps media replacement costs down.

One drive system - Disc design makes it possible to incorporate one drive system for all types of chips. Unlike many nylon mesh drum-type systems, CDF technology does not need two expensive drive systems to handle stringy chips.



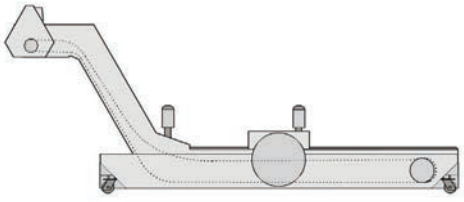
HINGED CONVEYOR

Coolant drains through the hinged conveyor into the conveyor chamber, then flows into the main coolant tank reservoir through the rotating discs. A scraper type conveyor is available as an option.



SELF CLEANING

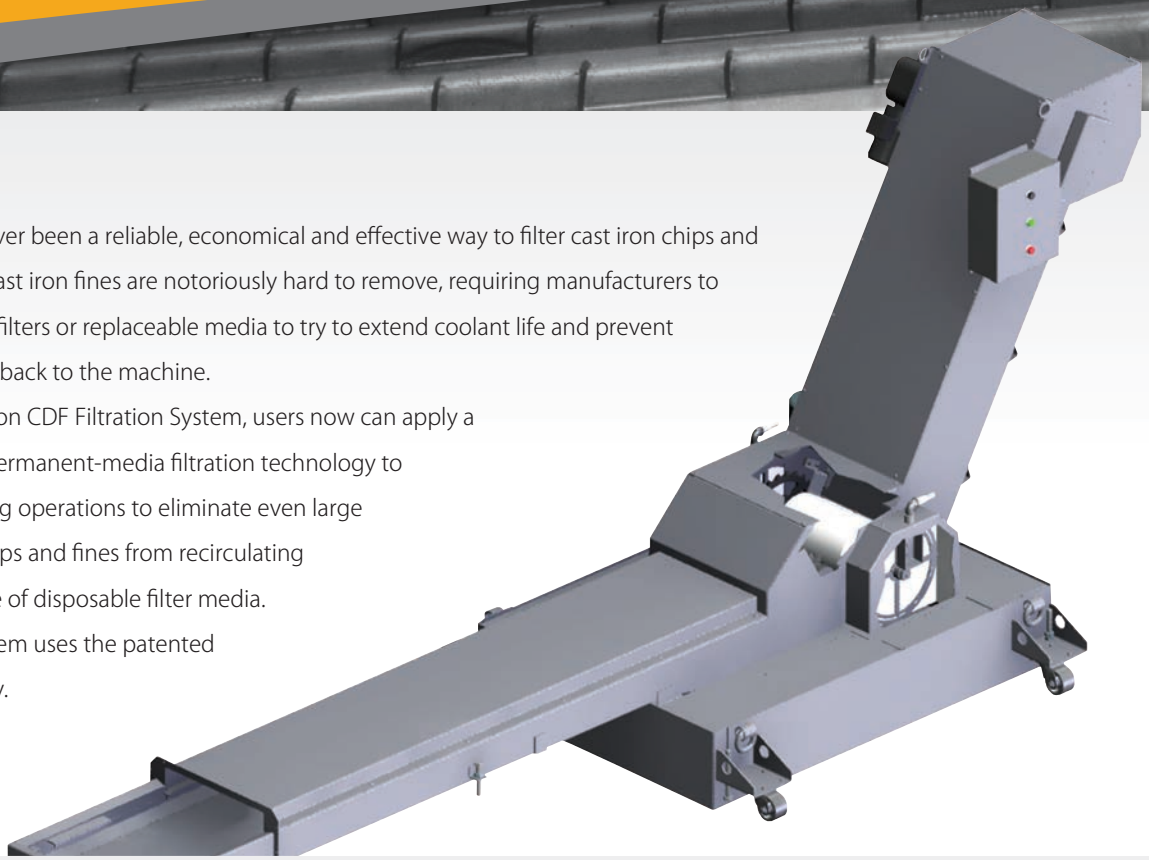
Continuous spray filters coolant against the stainless steel media, removing fines and chips. Nozzles are easily accessed for cleaning or replacement



LOW PROFILE

External disc location and coolant flow path allow 120mm minimum dimension, ideal for many smaller machines.

CHIP DISC FILTRATION (CDF)



CAST IRON CDF

Until now, there has never been a reliable, economical and effective way to filter cast iron chips and sludge from coolant. Cast iron fines are notoriously hard to remove, requiring manufacturers to use expensive vacuum filters or replaceable media to try to extend coolant life and prevent fines from recirculating back to the machine.

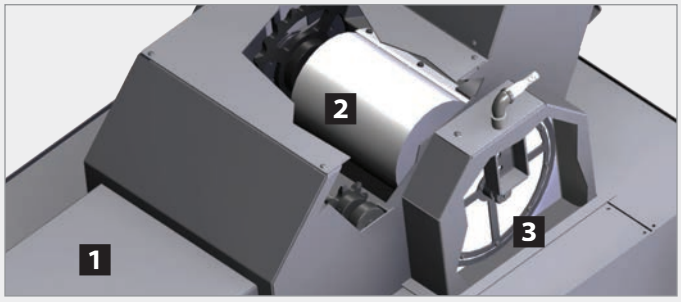
With the Hennig Cast Iron CDF Filtration System, users now can apply a proven, self-cleaning, permanent-media filtration technology to their cast iron machining operations to eliminate even large volumes of cast iron chips and fines from recirculating coolant without the use of disposable filter media.

Better yet, the new system uses the patented Hennig CDF technology.

HOW IT WORKS

1 Dirty coolant flows into the conveyor trough where large chips and particles settle out and are removed by the scraper belt, which continuously transports the material up the conveyor incline and dumps them in the chip hopper.

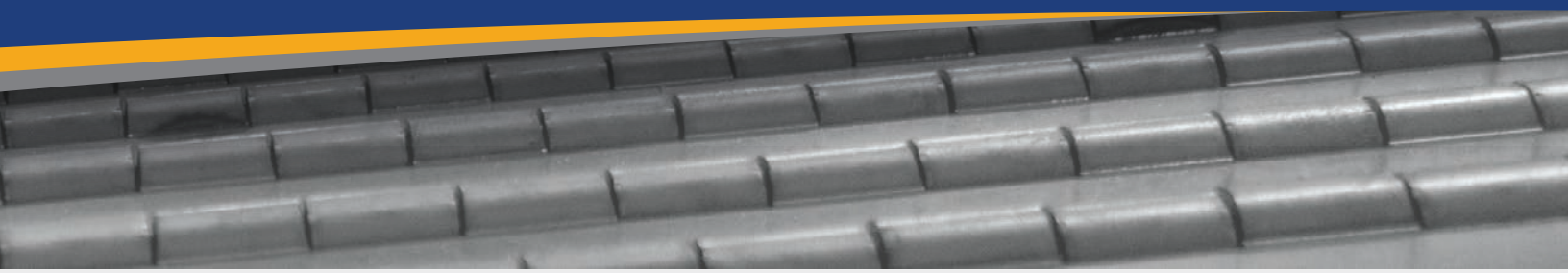
2 Smaller particles in solution are collected by a rotating magnetic drum, which indexes against a stainless steel blade that scrapes the particles off the drum. Once enough particles have collected to form a heavy sludge, the sludge drops onto the dry chip conveyor incline to be dragged along with the larger chips and fines, into the chip hopper.



3 Smaller particles that escape the magnetic field of the drum naturally migrate with the coolant flow toward the Hennig disc filter media, which uses a micronic weave stainless steel mesh screen to intercept particles as small as 25 microns. As this filtration disc rotates past the 12:00 position, a continuous backwash spray of clean coolant blasts the particles that have been collected on the disc towards the rotating magnetic drum, where they magnetically adhere and are scraped off as sludge.

As a result, only ultra-clean coolant is allowed to flow through the screens in the third stage to the clean coolant reservoir, where it is recirculated back to the machine tool or used in the unit's self cleaning spray cycle.

The end result of this simple process is the first truly cost efficient system for effectively removing cast iron chips and fines from coolant. End users now can take considerable cost out of their cast iron machining processes, and improve workpiece quality, with a unit that will pay for itself in a just a matter of months.



COOLANT TANKS

AUXILIARY COOLANT TANKS

If coolant isn't cleaned quickly, machining is interrupted. Hennig solves the problem with custom-engineered, custom-tailored auxiliary coolant tanks.

HEAVY-DUTY COOLANT TANKS

Coolant storage tanks are made from heavy gauge steel to provide leak-free service in harsh shop environments. Removable cover plates allow easy access to the tank's interior for quick, easy maintenance. Liquid level sign gauges are a standard feature, and baffles, chip baskets, and removable screens can also be added.

REPLACEABLE CARTRIDGE FILTER MEDIA

Custom coolant filtration systems generally include replaceable cartridge filter media and a replaceable cartridge filter. Continuous optimum performance is assured by configuring each filtration system according to the precise requirements of each application.

HEAVY DUTY & CYCLONIC PUMPS

Heavy duty pumps recycle coolant reliably. Automatic on/off float switches can be provided upon request. Hennig can provide a complete coolant filtration solution.

WORLDWIDE PARTNERS

In January 2008, Hennig became equity partners with French based Sermeto. With this move, Hennig & Sermeto will be able to better serve its customers with a broader product offering throughout Europe. The addition of the Chip Conveyor Product line will reinforce our market leadership position.

www.sermeto-ei.com

With the inauguration of an additional new 2200 square meter production plant in Boituva, Brazil, our partner Cobsen is increasing production capacity for chip conveyors. This new capacity will help us better serve our South American customers.

www.cobsen.com.br/hennig

Enomoto Brand chip conveyors have been evaluated for performance and durability throughout the world. In 1970, Enomoto Industries designed and manufactured the first chip conveyor in Japan. Enomoto brand chip conveyors are the most flexible in the industry.

www.enomotoweb.com

HENNIG
global excellence in machine protection

CHIP CONVEYORS ESTIMATE FORM

Please complete this form and email to info@hennig-inc.com or fax to 815-636-1988
9900 N Alpine Rd, Machesney Park, IL 61115 | 888-436-6446 | www.hennigworldwide.com

1 COMPANY (complete address)

_____ Name _____
_____ Title _____
_____ E-mail _____
_____ Phone _____ Fax _____ Date ___/___/____

2 EXISTING CONVEYOR (If you have the conveyor part number, disregard section 4)

Hennig Partners

Brand: ☐ Hennig ☐ Enomoto ☐ Sermeto ☐ Cobsen ☐ Other _____

Part # _____ **Serial #** _____

Belt Type: ☐ Hinge (○ Plain ○ Perf ○ Dimple) ☐ Scraper ☐ Magnetic

3 MACHINE INFORMATION

Make _____ **Model** _____ **Available References:** ☐ Photos ☐ Drawings

Type: ☐ Lathe ☐ Milling ☐ Drilling ☐ Tapping ☐ Other _____ **Chip Volume** _____ in^3/min

Spindle Horse Power _____ hp **Available Power:** ☐ 440 ☐ 220 ☐ 110 ☐ 24 VDC ☐ Other _____

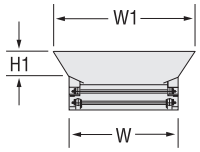
Chip Material: ☐ Soft Steel ☐ Hard Steel ☐ Stainless Steel ☐ Brass/Copper ☐ Cast Iron ☐ Aluminum ☐ Cast Aluminum ☐ Other_____

Kind of Chips: ☐ Fine ☐ Broken ☐ Lg Broken ☐ Lg Bushy ☐ Tight Bushy

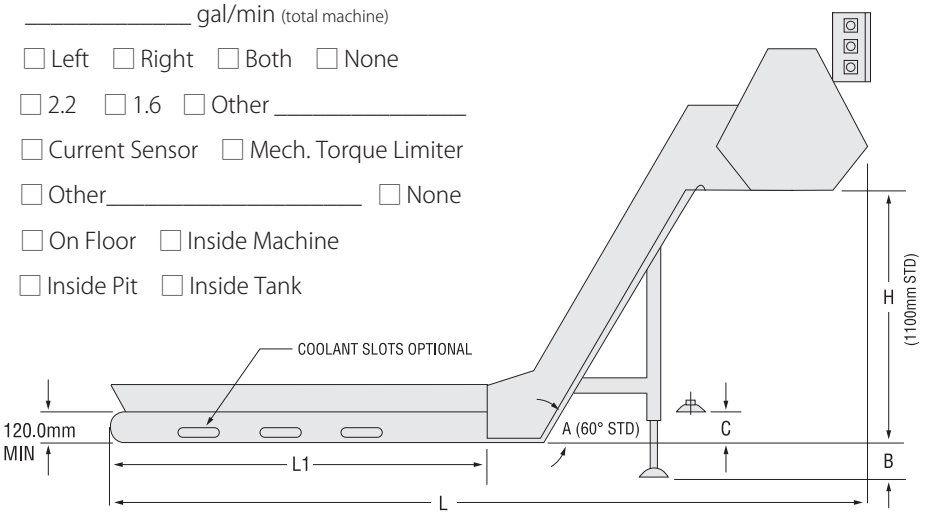
4 CONVEYOR TECHNICAL DATA

Intake Length L1 _____ mm
Max Length L _____ mm
Discharge Height H _____ mm
Max Width W _____ mm
Angle (45°, 60°) A _____ deg.
Width of Chip Chute W1 _____ mm
Height of Chip Chute H1 _____ mm
Foot Location (choose one) ☐ B ☐ C _____ mm
Casters ☐ Yes ☐ No
Paint (texture powder coated) _____
Coolant Tank Required ☐ Yes ☐ No (if yes, see page 10 for specifications)
Coolant Flow Rate _____ gal/min (total machine)
Coolant Slots ☐ Left ☐ Right ☐ Both ☐ None
Conveyor Speed (m/min) ☐ 2.2 ☐ 1.6 ☐ Other _____
Overload Protection ☐ Current Sensor ☐ Mech. Torque Limiter ☐ Other_____ ☐ None
Installed Location ☐ On Floor ☐ Inside Machine ☐ Inside Pit ☐ Inside Tank

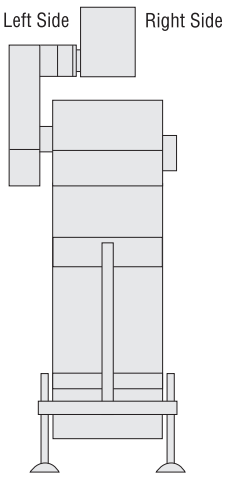
Motor Location ☐ Left ☐ Right
Power Requirements V_____ Ph_____ Hz_____
Control Box (check all that apply) ☐ Yes ☐ No
☐ Standard (fwd, rev, e-stop) ☐ Variable Speed
☐ Auto/Manual Selector Switch
☐ Electrical Plug (if yes, please specify below)
_____
Control Box Location ☐ Top Front ☐ Top Left ☐ Top Right ☐ Left Side ☐ Right Side ☐ Stand Alone



INLET CROSS SECTION VIEW



LEFT SIDE PROFILE VIEW



FRONT VIEW

HENNIG
global excellence in machine protection

CHIP DISC FILTRATION (CDF) ESTIMATE FORM

Please complete this form and email to info@hennig-inc.com or fax to 815-636-1988
9900 N Alpine Rd, Machesney Park, IL 61115 | 888-436-6446 | www.hennigworldwide.com

1 COMPANY (complete address)

_____ Name _____

_____ Title _____

_____ E-mail _____

_____ Phone _____ Fax _____ Date ___/___/____

2 EXISTING CONVEYOR (If you have the conveyor part number, disregard section 4)

Hennig Partners

Brand: ☐ Hennig ☐ Enomoto ☐ Sermeto ☐ Cobsen **Part #** _____ **Serial #** _____

☐ Other _____ **Belt Type:** ☐ Hinge (○ Plain ○ Perf ○ Dimple) ☐ Scraper

3 MACHINE INFORMATION

Make _____ **Model** _____ **Available References:** ☐ Photos ☐ Drawings

Type: ☐ Lathe ☐ Milling ☐ Drilling ☐ Tapping ☐ Other _____ **Chip Volume** _____ in^3/min

Spindle Horse Power _____ hp **Available Power:** ☐ 440 ☐ 220 ☐ 110 ☐ 24 VDC ☐ Other _____

Chip Material: ☐ Soft Steel ☐ Hard Steel ☐ Stainless Steel ☐ Brass/Copper **Kind of Chips:** ☐ Fine ☐ Broken ☐ Lg Broken

☐ Cast Iron ☐ Aluminum ☐ Cast Aluminum ☐ Other_____ ☐ Lg Bushy ☐ Tight Bushy

4 CONVEYOR & FILTER TECHNICAL DATA

Intake Length L1 _____ mm

Max Length L _____ mm

Discharge Height H _____ mm

Max Width W _____ mm

Angle (45°, 60°) A _____ deg.

Width of Chip Chute W1 _____ mm

Height of Chip Chute H1 _____ mm

Foot Location (choose one) ☐ B ☐ C _____ mm

Casters ☐ Yes ☐ No

Paint (texture powder coated) _____

Coolant Flow Rate _____ gal/min (total machine)

Coolant Type ☐ Water Soluble ☐ Synthetic

☐ Oil _____ ssu ☐ Other _____

Filtration Level (nominal) ☐ 25-30 micron ☐ 35-40 micron

☐ 40-45 micron ☐ Other _____

Conveyor Speed (m/min) ☐ 2.2 ☐ 1.6 ☐ Other _____

Overload Protection ☐ Current Sensor ☐ Mech. Torque Limiter

☐ Other_____ ☐ None

Installed Location ☐ On Floor ☐ Inside Machine

☐ Inside Pit ☐ Inside Tank

Motor Location ☐ Left ☐ Right

Power Requirements V_____ Ph_____ Hz_____

Control Box (check all that apply) ☐ Yes ☐ No

☐ Standard (fwd, rev, e-stop) ☐ Variable Speed

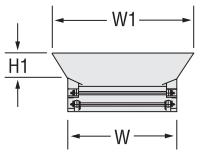
☐ Auto/Manual Selector Switch

☐ Electrical Plug (if yes, please specify below)

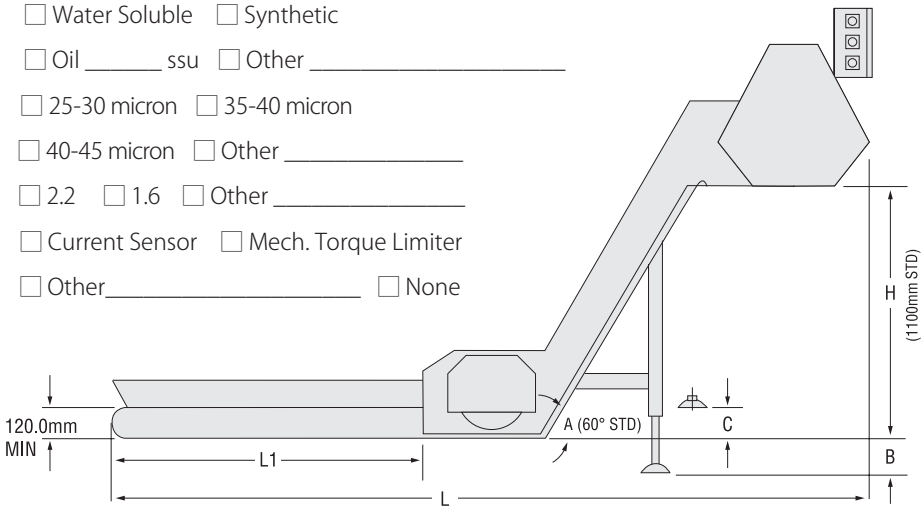
_____

Control Box Location ☐ Top Front ☐ Top Left ☐ Top Right

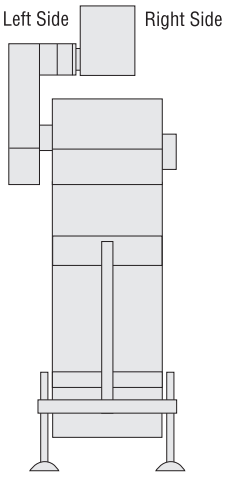
☐ Left Side ☐ Right Side ☐ Stand Alone



INLET CROSS SECTION VIEW



LEFT SIDE PROFILE VIEW



FRONT VIEW

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TANK DESIGN ESTIMATE FORM

Please complete this form and email to info@hennig-inc.com or fax to 815-636-1988
9900 N Alpine Rd, Machesney Park, IL 61115 | 888-436-6446 | www.hennigworldwide.com

1 COMPANY (complete address)

_____ Name _____

_____ Title _____

_____ E-mail _____

_____ Phone _____ Fax _____ Date ___/___/____

2 MACHINE INFORMATION

Make _____ Model _____ Available References: ☐ Photos ☐ Drawings

Type: ☐ Lathe ☐ Milling ☐ Drilling ☐ Tapping ☐ Other _____

3 COOLANT TANK TECHNICAL DATA

Tank Shape ☐ Square/Rectangular ☐ L Shape ☐ T Shape
☐ Other _____

Tank Size
L _____ mm
L1 _____ mm
L2 _____ mm
W _____ mm
W1 _____ mm
H _____ mm

Tank Mounting ☐ On Floor ☐ In Pit ☐ Other _____

Tank Options ☐ Casters ☐ Leveling Bolts ☐ Inspection Cover
☐ Removable Screen(s) ☐ Other_____

Paint (texture powder coated) _____

Pump 1 ☐ None ☐ Model _____
- Flow Rate _____ Pressure _____ Voltage _____

Pump 2 ☐ None ☐ Model _____
- Flow Rate _____ Pressure _____ Voltage _____

Pump 3 ☐ None ☐ Model _____
- Flow Rate _____ Pressure _____ Voltage _____

Filter ☐ Single Canister Bag ☐ Dual Canister Bag ☐ Cyclonic

Required Filtration Level _____ microns

Float Switch ☐ High Level ☐ Low Level ☐ None

Oil Skimmer ☐ Yes ☐ No

Coolant Capacity _____ gallons

Coolant Flow Rate _____ gal/min (total machine)

Additional Options _____

_____

_____

_____

_____

Additional Information _____

_____

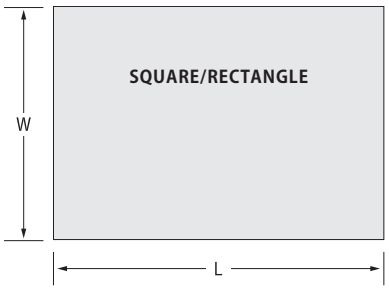
_____

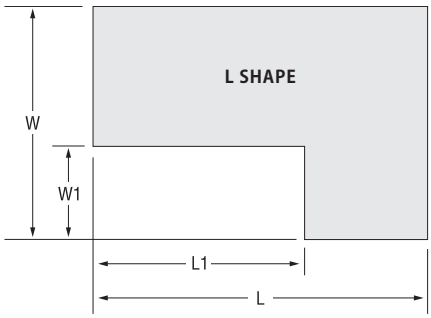
_____

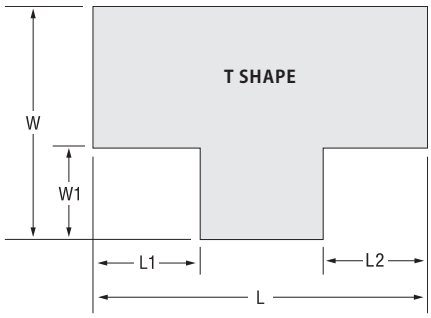
_____

_____

_____







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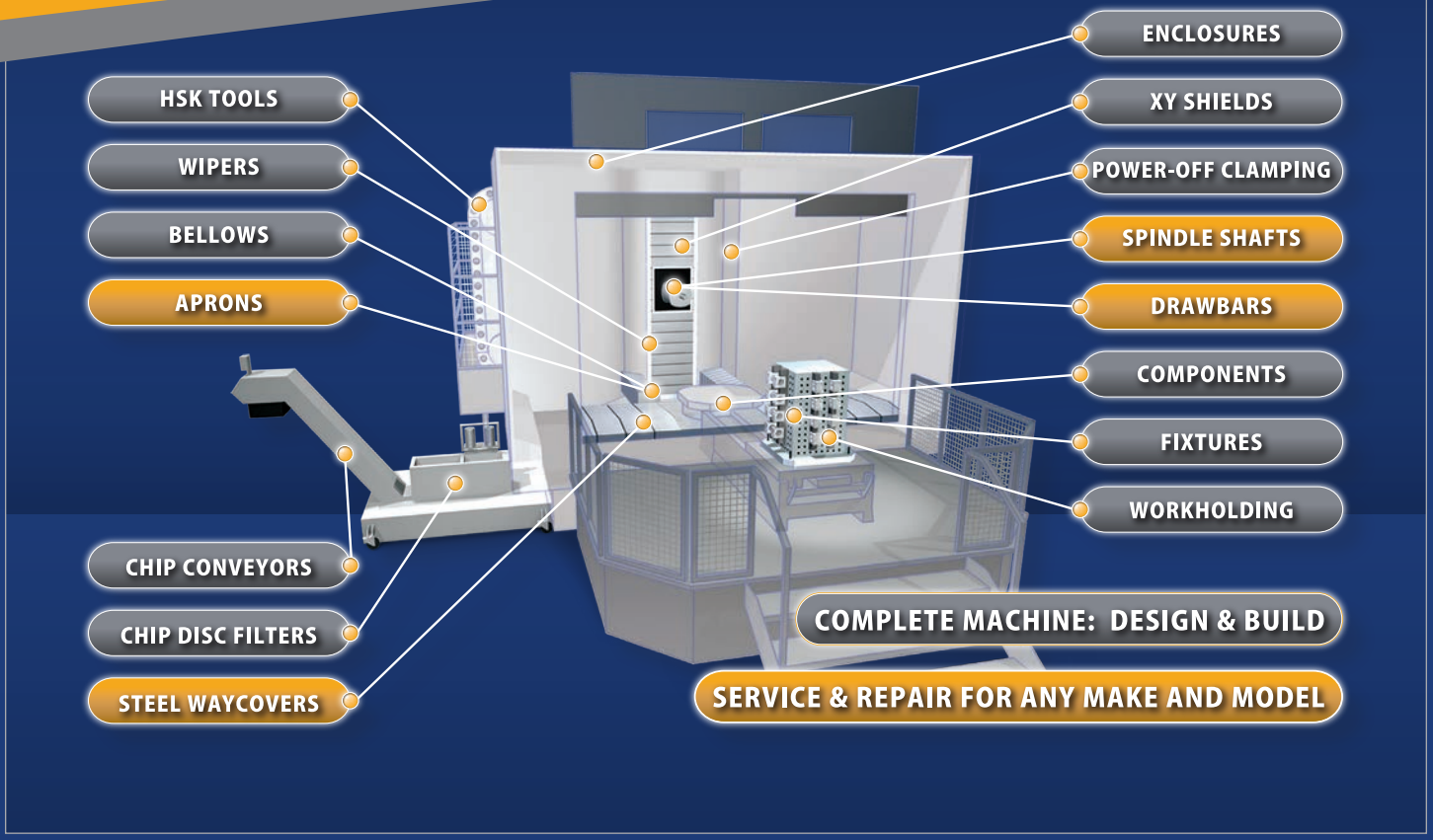

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