



- **CUSTOM ENGINEERING**
- **MANUFACTURING EXCELLENCE**
- **QUALITY**
- **RESPONSIVENESS**



MOTION CONTROL | FILTRATION SYSTEMS | BRAKING SYSTEMS | DRIVE TRAIN



Hilliard

A World Leader in Motion Control & Filtration Products

Since 1905

100+
YEARS
of
EXCELLENCE



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The Hilliard Corporation solves

problems. Based on extensive knowledge of motion control and filtration technologies, we make thousands of unique products, reaching markets globally.

Serving the needs of both small businesses and Fortune 500 companies, Hilliard products are found all over the world. We offer a broad line of motion control products, oil-filtration and reclaiming equipment, and plate and frame filter presses used in the food industry. We also manufacture starters for industrial gas and diesel engines and gas turbines. Our filtration systems are sold under the trade names of HILCO® and Star® Filters.

Our products are designed, manufactured, and sold according to our customer's applications. As a result, we have a large portfolio of custom engineered products that can be modified to meet new applications. At Hilliard, we embrace the challenge of product development.

With over 500,000 square feet and hundreds of highly skilled employees, we are able to meet desired requirements cost-competitively, even for short runs. Our experienced technical staff values craftsmanship, manufacturing efficiency, and responsiveness. In order to meet customer requirements, improve quality, and increase efficiency, Hilliard is continuously investing in new equipment and technologies.

In fact, we measure Hilliard's success based on our customers' ongoing satisfaction with our product and associated services. We are proud of our product reliability and durability. We often collaborate with customers in developing solutions that are integral to their product's profitable niche in the market place.



ENGINEERING DRIVES

PRODUCT DESIGN



PERFORMANCE

Engineering is the essence of Hilliard.

Our experienced engineering staff works directly with customers to meet any challenge in motion control and filtration.

Led by professional engineers, our technical staff includes mechanical, electrical, and environmental engineers, from seasoned professionals to recent graduates, working together to create solutions for you.

State of the art CAD/CAM systems couple with a well-equipped factory and tool room allow rapid prototyping. Fast turnaround is always a goal.

Engineers at Hilliard design complete systems, including electromechanical interfaces. We often work with customers to research and test products, acting as a laboratory for specific applications.



OUR VALUES

Although born at the turn of the previous century, Hilliard came of age during the Great Depression. The company philosophy is a remarkable mixture of innovation, creativity, practicality, and common sense.

Hilliard's corporate values are defined by our people. Hard-working, reliable, and customer-focused. These are the hallmarks of Hilliard.





AN INVESTMENT IN **QUALITY** At Hilliard, quality is our way of doing business.

At Hilliard, quality is not an add-on. Quality is a way of doing business. Each of our processes is documented to regulate operation, even on very short production runs. The result? Products that meet the specifications of our major OEM customers and performance that meets strict quality standards such as MIL-I-45208A or API614. Our products also meet rigorous requirements set by the ASME, the USDA, and the FDA.

Our vendor qualification program ensures superior compliance with raw material specifications. Products are thoroughly tested while under development. Our motion control laboratory builds the test stands needed to simulate operational demands. Our filtration lab offers oil analysis and filtration testing. Finished products are often evaluated under field conditions.



FLEXIBILITY BENEFITS CUSTOMERS

We have one goal: to manufacture products that solve customer problems. Over the years, we have found that the only way to reach that goal is to be flexible.

Flexibility is what defines our engineering and manufacturing expertise. We are willing to modify existing products or develop new ones, respond quickly to requests, and take on complicated projects for sophisticated applications. We will work for you to get the job done and we will do it in an affordable fashion. We welcome your inquires, challenges, and business.



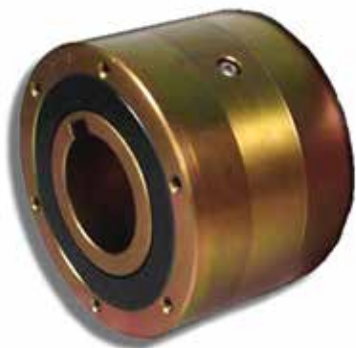
At Hilliard, we have built a reputation on solving motion control problems. We are structured so that you receive direct contact with our engineers for important consultations.

Special designs that fall outside standard product lines are met economically and efficiently. Since 1905, we have been working with our customers to solve their motion control challenges. We are confident that together we can arrive at a solution to your problem.

MOTION CONTROL PRODUCTS



Intermittent Motion Clutches



Hilliard Over-running Clutch



- Overrunning Clutches
- Enclosed Overrunning Clutches
- High-Speed Overrunning Clutches
- Intermittent Motion Clutches
- Torque Limiting Clutches
- Centrifugal Clutches
- Specialty Products
 - Bi-Directional Overrunning Clutch
 - Front Drive System
 - Auto-Lok Differential
- Electric and Magnetic Brakes
- Caliper Disc Brake Systems



FILTRATION PRODUCTS

Hilliard is an engineering company. Every one of our products has been developed and fine tuned by our exceptional staff of engineers. We bring fluid contamination problems under control, cost-effectively, with our full range of Hilco® and Star® engineered filters, cartridges, reclaimers, coolant recyclers & systems.

You will find under the HILCO® and Star® brands:

- Filter Cartridges
- Filter Vessels
- Reclaimers and Reclamation Systems
- Membrane Filtration Systems
- Portable Filters
- Filter Presses
- Oil Mist Eliminators
- Coalescer Separators



Hilco® Portable Filter



Filter Cartridges



Hilco® Oil Reclaimer

STARTERS FOR GAS TURBINES

Hilliard manufactures a wide array of starters for gas turbines and reciprocating engines. Our engineers stand ready to customize an engine starter to your specifications. However, one of our standard configurations may fit your needs without modification.



Hilliard Engine Starter

HILLIARD BRAKE PRODUCTS



The Hilliard Corporation is a world leader in industrial braking technology. Hilliard braking systems has a proven track record of performance, reliability, and value to our customers. Hilliard Corporation offers an entire range of industrial modular brakes, caliper brakes, rail and disk brakes, electric brakes and products such as power units, mounting brackets, and discs and hubs. Choose from our complete line of fail-safe and active braking systems to meet the needs of your specific application.

With more than 110 years of experience, put Hilliard's industrial brakes to work for your specific application or industry.

Designed for maximum flexibility and long, dependable service, our electric brake is electromagnetically released when voltage is applied and spring-engaged when current is interrupted.



Electric Brakes



Modular Brakes



Caliper Brakes



The patented Hilliard MK Guide Rail Brake is designed for use on elevators, conveyors, cranes, or other devices requiring a spring-applied, electromagnetically released brake. The patented MK brake can be applied to a guide rail or a brake disc.



MK Guide Rail Brake



MK Brakes



MK Disc Brake

Hilliard has developed a line of power units capable of controlling braking systems for a multitude of scenarios and applications. Hilliard's power units are designed and assembled in Elmira, N.Y. with only top quality components to ensure the integrity and longevity of each braking system.

Brakes are no longer straightforward on or off mechanical devices. Sophisticated Smart Brake deceleration controls with system status monitoring, fault acknowledgement, and feedback are required to maintain system integrity under all stopping conditions. This is particularly crucial on belt conveyor systems, where tension management and personnel safety are of paramount importance.



BrakeBoss®



DRIVE TRAIN PRODUCTS

CVT Systems with Engine Braking and Belt Protection Technology

Hilliard's Continuously Variable Transmission

The Hilliard Corporation has designed a CVT system that is more advanced than any other belt drive system currently available on the market. The Hilliard clutch system utilizes a tight belt which allows for seamless engine braking and belt protection at start up and during overload situations, to extend belt life. The Hilliard Continuously Variable Transmission system is designed to fit a wide variety of clutch envelopes so no expensive modifications are required for new vehicles or on replacements for vehicles currently in the field.



CVT



CVT (side view)

Extreme Duty Centrifugal Clutches

The Extreme Duty family of centrifugal clutches are designed to hold up to the rider's toughest demands, from the veteran racers to the beginners in a yard kart. These clutches are engineered to take the heat and keep on going. The quick-change spring design makes it easy to adjust engagement speeds without a lot of time or hassle.

They are available in three different series:

The Extreme Duty for fun karts, The Inferno Kart Racing series, and the Inferno Snowmobile Racing series. Each series is

specifically designed for peak performance in their sport.



Go-Kart Clutch



Auto-Lok™

The Hilliard Auto-Lok™ Differential offers equal power transferred to both wheels regardless of traction, allowing positive back drive through both wheels.

- Locks and unlocks automatically
- Self-contained
- Easy operation and steering

Applications

- snowthrowers
- lawnmowers
- trenchers
- self-propelled and walk-behind equipment
- golf carts
- utility vehicles



Front Drive System (Differential)

Our patented design consists of a dual bi-directional overrunning clutch for use as a secondary front drive for 4-wheel drive applications.

- Acts like a locking differential when engaged, but like an open differential when cornering
- Offers positive engagement of both front wheels in forward and reverse as a differential package
- Automatic engagement on the fly -- no shift linkages required
- Electric on/off engagement

Applications

- utility vehicles
- commercial mowers
- all-terrain vehicles





Hilliard

MANUFACTURING AND DESIGN

The Hilliard Corporation designs and manufactures:

- Industrial & Drive-Train Clutches: overrunning, intermittent motion, torque limiting, and centrifugal
- Electromagnetic & Caliper Brakes: industrial and commercial
- Filter Housings and Accessories
- Reclaimers and Reclamation Systems
- Filter Cartridges
- Turbine & Reciprocating Engine Starters
- Plate and Frame Filter Presses
- Transfer Valves
- Storage Tanks
- Vent Mist Eliminators
- Fluid Filtration and Conditioning Systems

PLANT #1

122,000 sq. ft. Manufacturing
17,500 sq. ft. Office Space

PLANT #2

52,500 sq. ft. Manufacturing
9,000 sq. ft. Outdoor Storage Area
19,300 sq. ft. Office Space
67,300 sq. ft. Storage

DRIVE TRAIN FACILITY

135,000 sq. ft. Manufacturing
38,500 sq. ft. Office Space

CARTRIDGE MANUFACTURING PLANT

43,400 sq. ft. Manufacturing



FACILITIES



PRODUCTION EQUIPMENT

PLANT 1 MACHINE SHOP

- Makino A88 Horizontal Machining Center
- Makino A81 Horizontal Machining Center
- (3) OKK VM7III VMC
- OKK VM76 VMC
- (2) Nakamura Tome TW-30 Twin Spindle
Twin Turret Lathe
- (6) Samsung SL25BSY Turning Center
- Doosan Puma 2600Y Turning Center
- (3) Ikegai Turning Lathes – TUR-26, TU-30, TU-40
- Samsung SL45 Turning Center
- Hankook Vertical Lathe w/ 62" Swing & Live Spindle
- Hyundai V5L Vertical Lathe
- Hardinge SL Speed Lathe
- Cincinnati Horizontal Mill Model 307-14
- (2) Bridge Port Mills
- Phoenix Saw Model PA13
- (3) Behringer Double Column Saws
- Cincinnati 21 & Clausing 22V Drills
- Cincinnati Drill Press 21
- 6' x 4' Radial Arm Drill
- Hand Drill Presses
- Fellows Gear Shaper, Model #6 Type 61
- Fellows Gear Shaper, Model 7A
- Fellows #6 X Type 615A Gear Shaper
- Warner & Swasey Turret Lathe Model 2A-M-510
- Ostra Pipe Threader / 613 Threader
- Lapointe HP40 Broach
- Baker Brothers Key Seater
- (2) Mitsubishi Wire EDM
- Parlec Tool Pre-setter

WELDING

- (2) Lincoln Arc Welders
- (3) Lincoln Mig/Arc Welders
- (2) Miller Heli-Arc Welder
- (2) L-Tec Mig Welders
- Airco Mig Welder
- (7) ESAB Welders
- ESAB Plasma Portable Cutter
- (9) Miller Pipe Worx 400
- Hypertherm Plasma Portable Cutter
- Hobart Seam Welder 40" Diameter x 6 ft. long
- (2) National Cylinder Gas Spot Welders
- Aronson Manipulato Sub ARC Welder Model
2G10YLA8UL-K3-
- (12) Welding Positioners
- (7) Acetylene Welders
- OTC Robotic Welding Cell
 - Pulse, spray and short arc welding
 - (2) 1000 lb. Capacity positioners
- Jetline Seam Welder Model LWS-96
- Taylor-Winfield Spot Welder Model NB-12-30

FINISHING

- (2) Paint Booth
- (2) Steam Clean Booth
- Roto Finish Deburring Machine Model ST-4BCLT
- (3) Glass Bead Cabinets
- Pangborn Walk-in Sand Blast Booth Model 44-NF
(Stainless Shot for stainless steel)
- Hofmann Walk-in Shot Blast Booth
(Steel shot for carbon steels)
- Hydrotec Steam Cleaner

TOOL ROOM

- Hurco VM2 Vertical Machining Center
- (2) Hurco TM10 Lathe
- Harrison Manual Lathe M460
- (2) Moore Jig Bore No. 3
- Hardinge Lathe Model HC
- Sharp Toolroom Lathe
- Alliant Knee Mill
- Bridgeport Knee Mill
- Mori Seiki MR1500G Engine Lathe
- Trak Bed Mill





PLANT 1

SHEET METAL

Baykal 180 Ton 8' Brakepress
Adira Shears 10' x 1/2" thk. (mild steel):
3/8" thk. (stainless steel)
ESAB CNC Flame Cutting Machine
• Bridge Type, 10' x 12' Bed
• Two Oxyacetylene Torches
• 4" max. thickness (steel)
• Two Plasma Torch
• 3" max. thickness. (stainless steel):
28 gauge min. thickness
Geka Ironworker Punch and Shear
ESB Saddle Cutter
Circle Cutter
Tektronix Curve Tracer
Vernon Pipe Burner MPMS-0342
Drill Press

LABORATORY AND TEST EQUIPMENT

Variable speed motors
Torque shafts
Oscillators
Voltage, Amp & Power meters
Vibration Analysis Equipment
Automated flow vs. Delta P filter test stand
Cartridge filtration efficiency stand
Water removal test stand for filter cartridges
Reclaimer performance test stands
Particle counter with laser for sub-micron range
Chemical analysis laboratory
Flow rate capability to 1600 gpm
Air Flow Test Capability
Media Specification and Test Equipment

GRINDING

Sunnen Hone 18" x 72"
Sunnen Vertical & Horizontal Hones
Models CU-616D/E & MBC-1800E
(2) Heald Models 273-A, & (1) 171 Grinders
Landis 36R-18x36 & "Cincinnati" R-50 Grinders
Blanchard Surface Grinder Model #11 - 18"
Blanchard Surface Grinder - 42"
Sharp Surface Grinder Model #36
Heald Grinder Model 72A
Kellenberger Universal Grinder
Kellenberger Vista CNC Grinder



SPECIAL R & D EQUIPMENT

Hilliard has the lab equipment to permit complete performance testing for motion control products, liquid and air filtration products.

MISCELLANEOUS

Mead Air Press
Defiance Roll Stamp Model #HRMA
Air Hydraulics Press Model C-300
Spinn-O-Matic Riveter Model TM-25
K. R. Wilson 25 Ton Hydraulic Press Model 37MD-2
Luma Electric Equipment Demagnetizer Model 120
Grieve Tempering Oven
Baltec Presses

TEST CAPABILITIES ON VESSELS

Hydrotest Stand
Liquid Penetrant Testing

MAJOR EQUIPMENT LIST

DESCRIPTION	MAKE	MODEL
Hardness Tester Hardness Tester	New Age Industries Wilson	Indentron 11686
Optical Comparator Optical Comparator	Jones & Lamson Starrett	FC-14 HB 400
Coordinate Measuring Machines	Browne & Sharpe (2) Browne & Sharpe (Manual) Sheffield (2) Browne & Sharpe Sheffield Hexagon	XCEL 7107 MICROEXCEL PFC 4-5-4 CORDAX 1805 MEA One System 7107 Pro Endevor 9.15.17
Vision Measurement System	Optical Gage Product	Smartscope Flash 400
Optical Micrometer	Keyence	LS-7501
Universal Super Micrometer	Pratt & Whitney	504
Spring Force Gauge	Mark-10	TSC
Vernier's 0-60" Range	Starrett	
Micrometers Inside 0-32" Depth 0-9" Outside 0-36"	Starrett	



CARTRIDGE MANUFACTURING EQUIPMENT

- (3) Pleating Lines - (2) Gas Ovens
- (3) Major Rotary Sealers (semi-automatic) – 1 w/robotic loading
- (1) Minor Manual Sealers
- (2) Rouselle 60 Ton Presses
- (2) Bag and Box Stations
- (2) Clamshells and other assembly equipment
- (1) Filled Cartridge assembly station
- (1) Paper Slitter
- (1) Helix MN-73-HS Spiral Filter-Core and Liner Machine
- (1) STM 250HD Spiral Filter-Core and Liner Machine



DRIVE TRAIN PLANT MANUFACTURING EQUIPMENT

- (3) Tyne Miles Broaches
- (2) Apex 30 Ton Vertical Broaches
- (3) Wilton Drill Press
- (1) Doosan Puma TT2500SY Twin Spindle, Twin Turret Lathe
- (1) Doosan Puma TT1800SY Twin Spindle, Twin Turret Lathe
- (4) Hardinge Quest 8/51 Lathes W/ Robotic Loading
- (1) Hardinge Quest 6/42
- (1) Hardinge SR200 Lathe
- (2) Ikegai Turning Lathes w/robotic loading
- (1) Mori Seiki ZT2500 Turning Center Twin Spindle, Twin Turret Lathe
- (1) Mori Seiki ZL35 Lathe
- (7) Muratec MW 200 Gantry Load
- (1) Nakamura – Tome WT-300, Twin Turret Lathe
- (1) Nakamura - Tome TW30 Twin Spindle, Twin Turret Lathe
- (1) Okuma LFS-15 Twin Spindle Lathe
- (7) Samsung SL20 Lathes
- (3) Samsung SL25 Lathes
- (3) OKK HM600 Horizontal Machining Center
- (7) Makino a61nx Horizontal Machining Center
- (1) Bridgeport 3020 Vertical Machining Center
- (1) Doosan DNM 650 Vertical Machining Center
- (1) Doosan MYNX 5400 Vertical Machining Center
- (1) DMG DT 40i Tapping Center
- (1) Hardinge XR 1000 Vertical Machining Center
- (1) Samsung DMT 30 Vertical Machining Center
- (1) Ajax/Tocco Magnethermic Heat Induction System
- (2) Ajax Tocco Single Spindle Induction Heater
- (1) Ajax/Tocco 2 Spindle Induction Heater



TOOL ROOM

- Haas Tool Room Lathe
- Hass Tool Room Vertical Machining Center
- Bridgeport Knee Mill
- Jet Drill Press
- Wilton 7040 Horizontal Saw



CRAFTSMANSHIP PRODUCES RELIABLE CODE VESSELS

Hilliard, under the trade name HILCO®, produces more code vessels than anyone else in the Northeast. This means that the fabrication and welding of our filtration devices and transfer valves have passed the most stringent code requirements of the American Society of Mechanical Engineers (ASME).

One code vessel of which we are particularly proud is used in the system that controls the filtration of seal oils used in compressors and turbines. Designed to withstand operating pressures as high as 4,300 PSI, these vessels must conform to the exact specifications of compressors and turbine manufacturers including API 614 codes. These vessels are placed in operating environments ranging from corrosive salt air to earthquake zones. Trouble-free operation is essential for the safety and reliability of the compressor and turbine systems that our products protect.

LINCOLN TUNNEL CLUTCHES EARLY RETIREMENT AT 56

Superior engineering, clean design, and outstanding manufacturing add up to durable products. Take for example the Hilliard over-running clutches installed in the original ventilation system of New York City's Lincoln Tunnel in 1939.

In 1995, they were replaced with new Hilliard clutches, but only because the rest of the components in the system were worn and needed to be replaced. In essence, the project leaders decided to give the clutches an early retirement. Otherwise they would still be going strong today, performing without error or slippage for many years to come.







Founded in 1905, **The Hilliard Corporation** has evolved from a single product business into a special applications engineering company serving customers worldwide.

Located in Elmira, New York, and independently owned for more than four generations, the company has grown and prospered for more than a century.

Today, the Hilliard Corporation comprises four facilities, totaling:

- More than 350,000 square feet of manufacturing area
- Over 75,000 square feet of office space
- Over 76,000 square feet of storage area



**Hilliard Products are
Made in the USA.**



CUSTOM ENGINEERING • MANUFACTURING EXCELLENCE • QUALITY • RESPONSIVENESS



Hilliard

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