

The HILCO Advantage: PL Cartridges



**Maximum Performance at a
Minimum Price**



Hilliard
HILCO® DIVISION

HILCO cartridges have a reputation the world-over for no-nonsense industrial-strength quality and performance. They are engineered for durability in a tough environment to provide maximum performance at a minimum price. Because cartridge design is the key to filter performance, rigid inspection procedures ensure every cartridge performs up to its design expectations.

PL Cartridge Components



Center Tube

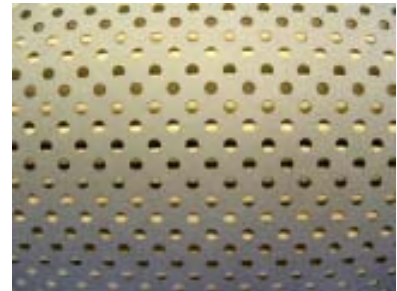
The center tube, the backbone of the cartridge, supports the element both axially and longitudinally against the forces of pressure and flow. HILCO tubes are plated for corrosion protection and designed to withstand up to 100 pounds of differential pressure or four times the working pressure the cartridges should normally encounter. HILCO center tubes feature helical seams that quadruple the material thickness in the seam to give maximum strength with minimum weight.



HILCO cartridges are assembled with the element tight against the center tube to gain full support from the tube. Some refill brands have a considerable gap between the tube and the element to facilitate speedy assembly. Under pressure, any gap between the element and the supporting center tube will allow the element to be pushed in until it contacts the center tube and may allow the element to rupture from lack of support.

Ambient

The ambient is the outer protective jacket that provides handling protection and acts as a flow diffuser to maximize filter performance. The HILCO ambient is perforated from heavy-duty, resin saturated, water-resistant card stock. HILCO uses a non-metal ambient for its corrosion resistance and to reduce the amount of disposable metals in the cartridge. It has no sharp edges to cut and cannot introduce hanging metallic burrs. The smooth perforations will not abrade the filter media that it protects. The HILCO ambient fits snugly around the element to firmly hold the pleats in place.



Side Seam

The side seam results from wrapping an element around a center core to form a cylinder. The two longitudinal edges of the element are joined together in a seam running lengthwise to the cartridge. HILCO PL cartridge elements employ two sealing methods for this side seam. The more open, -20 to -03 single-ply media utilizes a time-proven double overlap that effectively seals the element seam. On the high



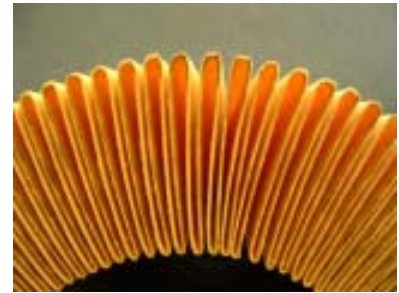
efficiency, three-ply sandwich -12 media, the overlapped seam is filled with an epoxy sealant that actually soaks into and seals all three plies.

Element

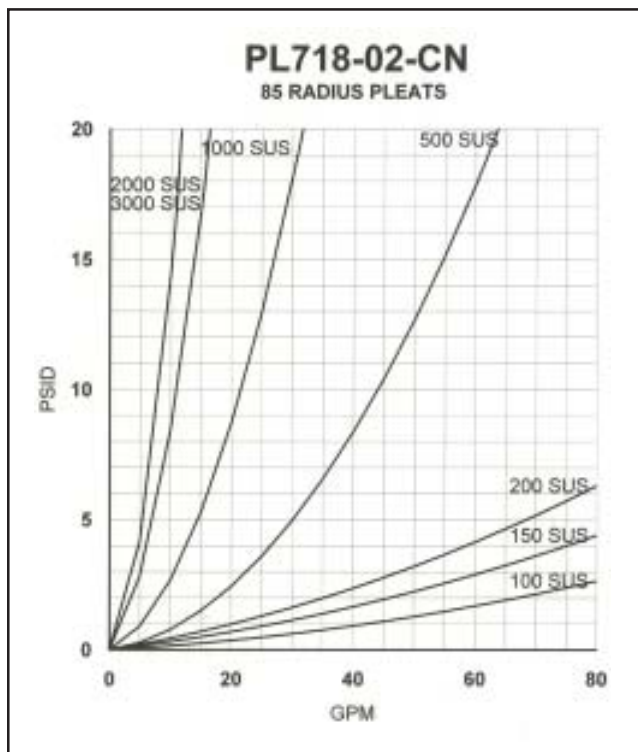
The element is that part of the filter cartridge that actually does the filtration. It must stand up to a wide range of fluids, temperatures, viscosities, and flow rates. HILCO PL elements are made from **specially formulated filter media** selected to provide the most effective combination of fluid particle separation, fluid compatibility, and structural properties. The media is pleated with **controlled-radius pleats**, which maximize effective filtration area and dirt-holding capacity, and resists bunching, distortion, and rupture. Sharply creased pleats overstress fibers, causing cracks and bypassing. Hilliard's manufacturing process forms a larger radius pleat on the outside and a smaller one on the inside. This causes the pleat geometry to assume an elliptical shape which stiffens the pleat pack and acts as a pleat separator to provide uniform pleat spacing. This feature permits lower pressure drops and larger dirt capacities over those of sharply pleated elements.



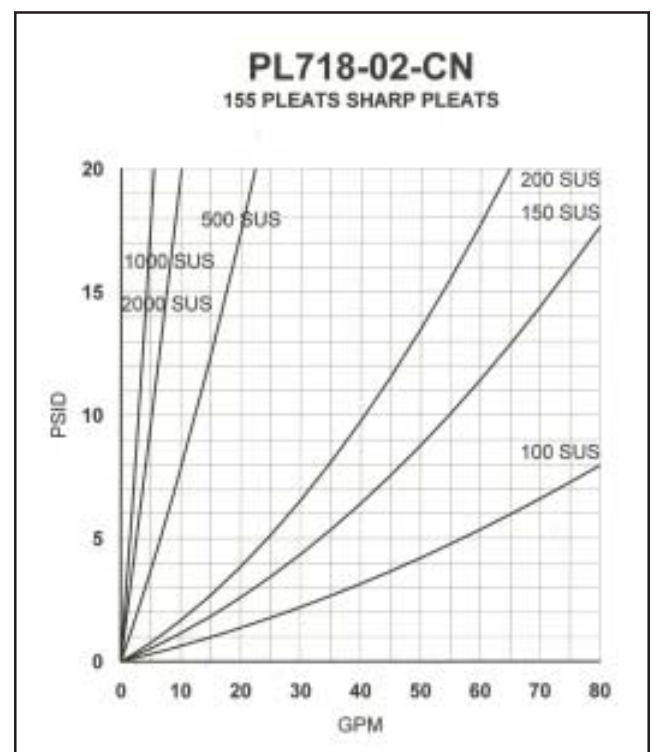
Brand X



HILCO



HILCO Brand



Brand X



Gaskets

The gasket ensures that 100% of the fluid flows through the filtering element without bypass leakage around it. Flat gaskets use the finest materials available which are selected for compatibility in the operating environment. The HILCO flat fiber gasket is unique in that it contains no binders that leach out, which can diminish the integrity of the gasket or the fluid system it is there to protect. HILCO o-ring seals are available in various materials to match system compatibility demands. The CG or o-ring version of the PL cartridge is unique in the fact that a premium sealing system is offered on a cartridge that provides maximum filtration value for the dollar.



Brand X



HILCO

Adhesive Sealant

The urethane adhesive sealant is formulated to stand up to virtually any filterable fluid. Its function is to bond the end caps to the element and provide a leak-proof seal. To qualify, it must first pass a rigorous battery of temperature and compatibility testing. To effectively seal, the adhesive sealant must actually wet and soak into the media. Beware of plastisol adhesives that do not soak into the media and may permit bypass leakage between the plastisol and the element. Plastisols also may dissolve in some synthetic fluids.

End Caps

The cartridge end caps are part of the cartridge supporting structure. They must support longitudinal cartridge loading and provide a gasket-bearing surface. The end caps also hold the adhesive sealant that seals the elements. HILCO end caps are either plated steel or molded heavy-duty structural urethane.



Efficiency Table

Efficiency	12 Media	02 Media	03 Media	05 Media	10 Media
99.5%	BETA ₆ = 200	BETA ₁₄ = 200	BETA ₂₈ = 200	BETA ₄₀ = 200	BETA ₅₉ = 200
98.7%	BETA ₅ = 75	BETA ₁₃ = 75	BETA ₂₇ = 75	BETA ₃₈ = 75	BETA ₅₈ = 75
90%	BETA ₄ = 10	BETA ₁₀ = 10	BETA ₂₂ = 10	BETA ₃₆ = 10	BETA ₅₅ = 10
50%	BETA ₃ = 2	BETA ₅ = 2	BETA ₈ = 2	BETA ₂₃ = 2	BETA ₃₇ = 2

BETA Ratio vs Particle Size

Beta Rated

HILCO uses Beta ratings to eliminate the confusion between nominal and absolute ratings. Media designations such as -5 and -12 are used to delineate one media grade from another. Each media grade has a Beta-rated efficiency with Beta ratios from 75 through 1000. The HILCO range of media grades permits one to choose an optimum efficiency for virtually any particle size range.

Features and Benefits

- Designed to withstand temperatures up to 250° F
- Controlled-radius pleats maximize effective filtration area and dirt-holding capacity
- Designed to withstand pressures up to 100 PSI
- Composed of specially formulated filter media to provide the most effective combination of fluid particle separation, fluid compatibility, and structural properties

The Hilliard Corporation

100 West Fourth Street
 Elmira, New York 14902-1504
 Phone: 607-733-7121
 Fax: 607-733-0928
<http://www.hilliardcorp.com>

HCA-2

Your Local Representative:

Northeast Filter & Equipment Co.



135 Parker Court
 Chardon, OH 44024
 PH: 800-333-6332
 FX: 440-285-0730
www.nefilter.com



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