

Steve Bergant

www.advfiltration.com

sbergant@advfiltration.com

14010 Gracebee Ave.,

Norwalk, CA 90650

(323) 540-8789



ADVANCED FILTRATION CONCEPTS

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HILCO[®]

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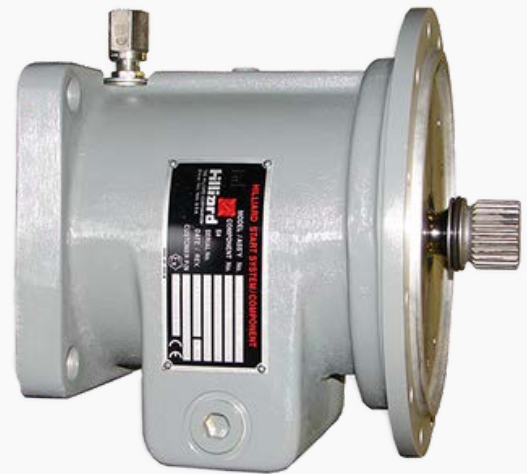


**HILLIARD
ENGINEERS
STARTERS**

The Hilliard Corporation is a producer of Starter Clutch Drives, Electric Starter Assemblies, Hydraulic Starter Assemblies and Pneumatic Starters for use in aero derivative industrial turbine and reciprocating engine applications. Hilliard starter designs and equipment are operating worldwide in pipeline, power generation and marine propulsion markets. Major starter-fleet experience has been achieved on General Electric, MAN Diesel & Turbo, Peter Brotherhood, Pratt & Whitney, Siemens, and Solar engines and auxiliary gear boxes. New application designs can be engineered through the combination of available motor-starter structures and overrunning clutch modules.

Starter Overrunning Clutch Drive

The Hilliard High-Speed Starter Overrunning Clutch Drive provides positive engagement and high torque on demand. Featuring a unique roller-ramp design, the clutch when engaged transmits power via the precision-machined cam and roller assembly connected to the input shaft. A ball bearing at each end of the roll cage supports and aligns the cam in relation to the drive (output) shaft.



Hydraulic Clutch Assembly

Variable and fixed displacement types. SAE mounting, spline shafts. Typical operating pressures up to 5000 psig (350 bar). High-speed operation. High starting torque efficiency. Different sizes for different applications. Suitable for open and closed loop circuits. Supply includes overrunning clutch.



Electric Start Assembly

24 volt DC power. Solenoid actuated Positork drive. Output torque up to 80 ft lb. Splined output for gas turbine applications. SAE 3 mounting flange, multi-position. CW and CCW direction of rotation.



Pneumatic Start Assembly

Operates on any pressurized gas (0-220 psig). Break-away torques up to 3,700 ft lb. Output speeds up to 12,000 RPM. For industrial gas turbine or reciprocating engines. Standard and custom interfaces available. Helical rotor design. Positive displacement. Roller-ramp overruning clutch to pre-engage the starter to the turbine. Dynamically balanced, gas tight. Delivers rated torque at 0 RPM.

Applications: Marine/Shipping - Natural Gas Pipeline
Transmission - Oil & Gas - Power Generation -
Turbine Engines



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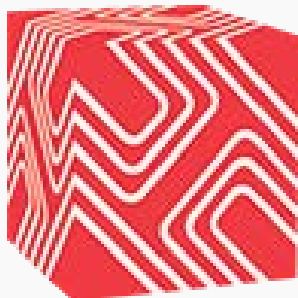
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