TI TURBOGUARD™ SMART START SYSTEM

ANOTHER TDI TurboTwin™ RELIABILITY BREAKTHROUGH: TurboGuard™ AIR STARTERS

TDI engineers are constantly designing new features and functionality to improve the reliability of engine operations and assure successful starting under the most challenging conditions. The problem of hydrolock has been vexing engine manufacturers for many years. After testing the TurboGuard system on their own laboratory engines and seeing its split second responsiveness, TurboGuard was tested at a number of engine manufacturer’s laboratories around the world. The test results proved 100% positive at every location. TurboGuard will be appearing on a number of OEM engines soon and is available immediately as a retrofit safeguard to any engines where the T100-V are installed.

The TurboGuard control box allows you to choose “safe start mode” with TurboGuard protection, or “immediate start mode” for normal starting when you are doing multiple starts or testing.

A RELIABILITY BREAKTHROUGH PREVENTING ENGINE DAMAGE & DOWNTIME CAUSED BY HYDROLOCK

APPLICATIONS

- Workboats & Marine
- Power Generation/Remote Starts
- Critical Engine Availability Sites
- Engines with Long Periods Between Starts

Anything Less Than a TurboTwin Air Starter is a Compromise
1. Coolant Leak

For TURBOGUARD?

What Applications
Starts with no operator
Power Generation/Remote
In port for periods of time.

Coolant or fluids after being
Are susceptible to leaking
Workboats & Marine
Engines with Long Periods
Between Starts are candidates
for TURBOGUARD because
during those times, the engine
Is vulnerable to leaking coolant.

What is Hydrolock?
HydroLock occurs when the engine is started
With coolant in a cylinder. The coolant is driven
Through the cylinder at very high pressures
during the compression cycle. Because liquids
do not compress, as the pressure builds, there
Is no place for it to go causing an internal
Compression Burst: Liquid in the
cylinder will not compress. With
nowhere to go, it will cause a
Hydrolock Burst that damages
the engine.

What Damage Does it Cause?
The high pressure mechanical collision can
Cause bent connecting rods, broken pistons,
a cracked block, damaged cylinder head, and
Bent Connecting Rod
Broken Piston
Broken Crankshaft

How Does TDI TurboGuard Prevent Hydrolock?
TDI’s TURBOGUARD Smart Starter detects the
Presence of leaking coolant, extraneous fluids,
or any other type of obstruction in the cylinders
during the start sequence. TURBOGUARD
Automatically shuts the starting process down
Before damage occurs – Preventing a
Hydrolock incident.

Introducing TDI’s Proprietary
Smart Starter Control
TURBOGUARD’s innovative smart starter technology has the
Ability to regulate air pressure, speed, and
other variables in such a precise way it can
determine if there are cylinder obstructions and
Abort before coolant is pushed through the
System to cause damage. This is a significant
Engineering accomplishment because a typical
Engine start cycle may go from 0 to engine
Firing RPM in under 5 seconds.

How TurboGuard
Smart Starting Works
TURBOGUARD’s intelligent control system has extended the normal cycle ten seconds longer
Using relay valves, solenoids, and precise
Control of speed and air pressure. As the engine is slowly rotated, the starter system monitors
For anomalies in the process indicating a hydro-
Lock condition. If an obstruction is identified, the
Sequence is aborted. If no obstruction is detected, the
Engine will be brought to normal
Crank speed utilizing a “soft-start pressure ramp” to
Minimize impact torque between starter pinion and engine ring gear. In cases where the engine
Has been started recently (durations you can
Preset), the protective safe start feature can be bypassed and the engine can start immediately.

What is TURBOGUARD?
FINALLY A PROTECTIVE SAFEGUARD AGAINST HYDROLOCK ENGINE DAMAGE

TurboGuard Assures a New Level of Engine Reliability

Your engine has many built-in safeguards, but protection against hydrolock is not one of them. With TURBOGUARD there is a new level of protection against the threat of leaking head gaskets, oil from valves, or other obstructions that make their way into a cylinder. Being able to abort the start cycle before damage is done delivers a new level of engine reliability.

TurboGuard is a Safeguard for Your Business

It’s estimated that one hydrolock incident can cost between $50,000-$1 million dollars in downtime and replacement costs. TURBOGUARD isn’t just a new reliability feature for your start system; it’s a quality process safeguard that minimizes the possibility of a catastrophic loss of engine availability. For protecting your engines from hydrolock damage and assuring equipment availability in your operations, TURBOGUARD is an essential option.

The TurboGuard Start System Fits All Kinds of Engines

Presently, TURBOGUARD is designed to fit on all large reciprocating engines from 70-300 liters. It fits the same engine market as TDI’s T100-V models. It’s more than just a starter. TURBOGUARD systems include a new TDI smart starter, valves, controls, and all the hardware required for a fast, complete installation on your engines.