

TDI **TURBOTWIN™**

AIR STARTERS FOR

MARINE APPLICATIONS



TURBOTWIN: The Only Turbine Air Starter That Thrives On Salt Water.

TDI
TECH DEVELOPMENT INC.
www.tdiairstarters.com

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**At Sea or
in Fresh
Water,
Anything Less
Than a
TURBOTWIN™
Starter is a
Compromise.**

*Nothing lasts as long
as a TurboTwin.*

Salt water, wetness, and humidity destroy your engine and its components. Wouldn't it be nice to have one piece of equipment you didn't have to worry about?

That's what we thought when we designed TurboTwin Turbine Air Starters for marine applications. Our vaneless design has no rubbing vanes to stick, swell, or wear out—salt air, wetness, contaminated air and humidity do not affect the TurboTwin. Our unique open air path design features extremely large openings allowing contaminants to pass through with every start instead of lodging inside as they do on competitive models.

*TurboTwin blade designs optimize
air throughput for greater
starting power.*



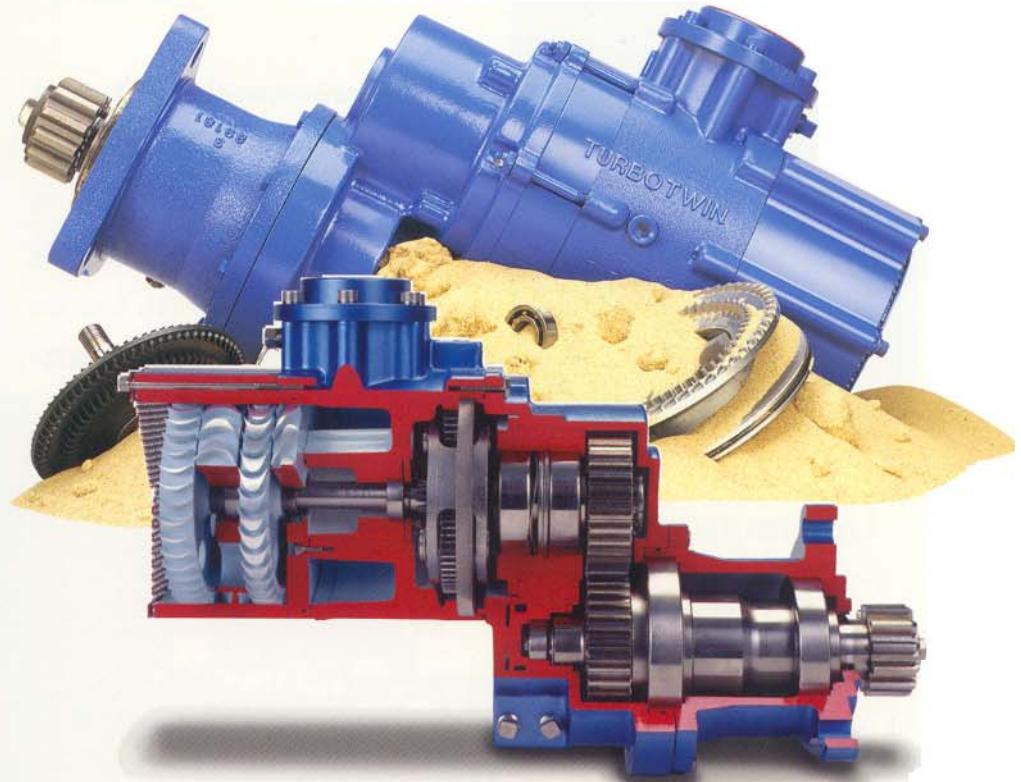
TurboTwin handles the dirtiest messiest environments.

Contamination— No Problem

Pipe Scale. Salt Water.
Corrosion. Other starter
manufacturers don't like to
talk about these subjects.
TurboTwin air starters for
marine applications are



specifically designed to
handle them. No starter
tolerates contamination as
does the TurboTwin.



No Plastic Parts

Our starters are all about
quality. No plastic parts—
only rugged steel and
aluminum alloy components
built to last.

An Air Supply That Lasts Longer At Sea Can Be Critical

On the water, there's no place
to go if you run out of air.
TurboTwin offers the most
power and torque per unit of
air. That's efficiency. That's
TurboTwin reliability.

No Lubrication, No Mess

TurboTwins are grease-
packed for life. That means
no lubrication, no oily mess.

On The Water Is No Place For Problems

Your work—even your life—
is at risk on the open water.
Starter reliability is critical.
Why not step up to the starter
that delivers more cranks,
requires less maintenance and
has the design and part qual-
ity to last longer than any
other starter on the water?

*High-Performance TurboTwin Starters
are the long-lasting alternative to name-
type starters.*

TURBOTWIN™

T100 Series Turbine Air Starters

**Uncompromising
Performance,
Reliability and
Longevity for Large
Engines Up to
300 Liters**

Large engines doing big jobs cannot afford starting problems. This is why the TurboTwin T100 Series has been designed for ultimate reliability, durability and long life. Long cranking cycles, contaminated air, and improper maintenance—a starter's worst

enemies—have almost



*Unparalleled
aerodynamic
elements
manufacturing
experience makes*

*TurboTwin the leader in
power and reliability.*

no effect on the T100. That's because the T100's superior design effectively manages these problems. Here's how:

Ready For The World's Most Contaminated Air

The T100's vaneless turbine motor has no rubbing vanes to stick, swell, or wear out—wet air or gas have no effect on internal parts. Contaminated air that clogs, damages and shuts down lesser units passes through TurboTwin's "open air path" design. Even sour natural gas is no match for the T100's corrosion-resistant interior. It all adds up to unmatched reliability—regardless of the conditions you operate in.

Aerodynamic Speed Control Permits Longer Cranking... and No Burnout

Long crank cycles are a reality that can burn out the gearbox of lesser-grade starters. TurboTwin's design has eliminated the automatic trip valve (ATV) providing precise aero-

dynamic control over motor speed. TurboTwin's lower gear ratios reduce starter workload and allow cool running that prevents starter burnout.

No Compromise On Any TurboTwin Part

T100 uses only high-quality, high-strength steel and aluminum alloys machined to the industry's tightest tolerances. There's no cutting corners, and definitely no plastic parts as used in other turbine air starters.

Fewer Moving Parts Means Fewer Repairs

T100 features half the moving parts found on other turbine air starters. The design yields greater reliability, reduces overhaul, and minimizes potential part repair costs.

No Oil Means No Fugitive Emissions, Reduced Maintenance, And A Cleaner, More Reliable Starter

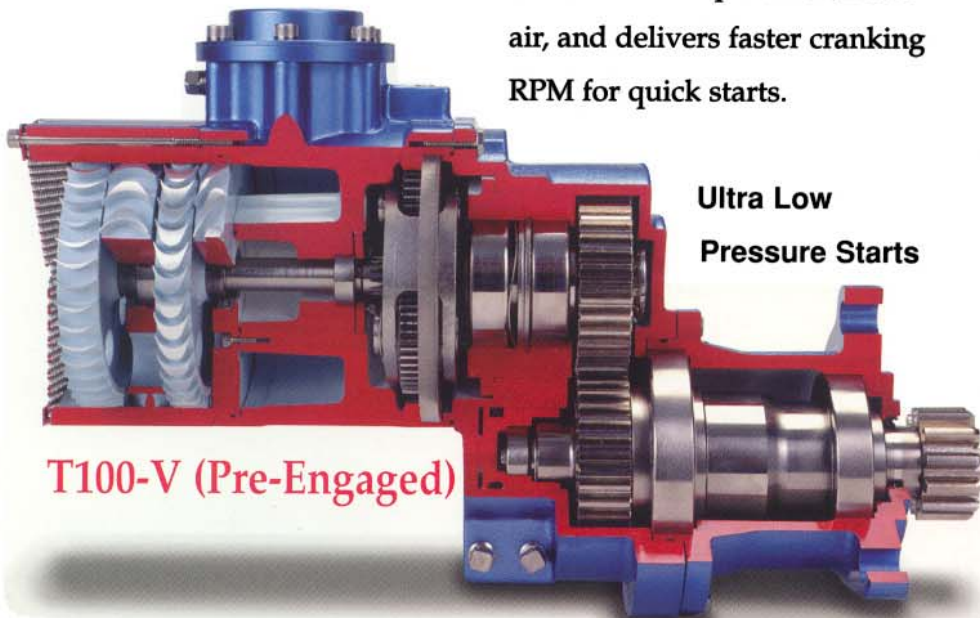
The T100 is grease-packed for life so there is no need for oil

The T100's vaneless motor design contributes to longer life.

lubrication, no oily fugitive exhaust emissions, and no maintenance required.

More Power, Faster Starts

TurboTwin produces up to 25% more horsepower and a superior turbine torque on a unit of air, and delivers faster cranking RPM for quick starts.



New T100-V Offers a Pre-Engaged Solution

The new T100-V allows a flexible fit for applications requiring pre-engagement. With T100-V, you can get the legendary durability and reliability of TurboTwin, with pre-engagement.

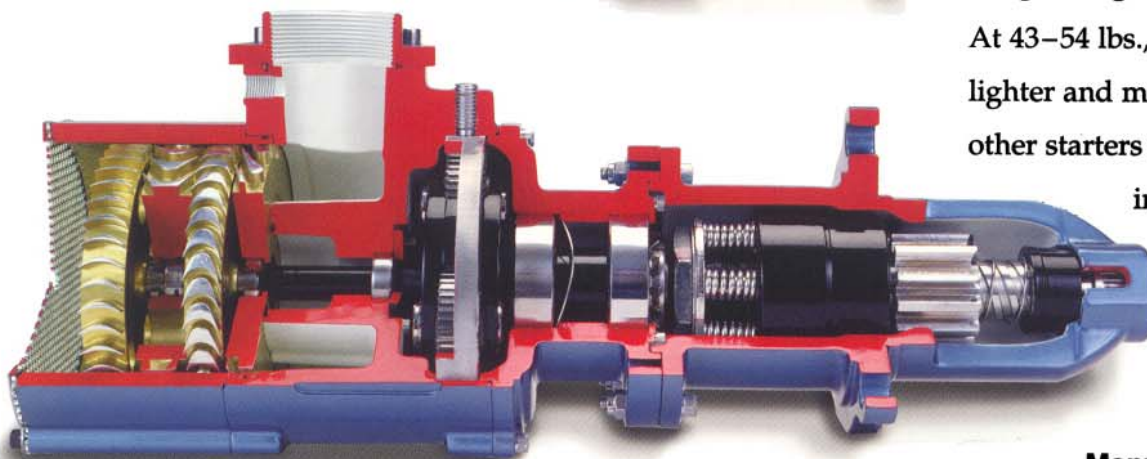
T100 can provide reliable starts at pressures as low as 30 psig making it ideal for field gas compressor applications and compressor rental fleet operators.

Lightweight

At 43–54 lbs., T100 is not only lighter and more compact than other starters in its class, but installation can be a one-man operation.

Choose From Many T100 Models

T100 is offered in a variety of nozzle and pinion configurations to meet your exact application requirements. See the following specification pages to select the appropriate model.



T100-B (Inertia)

T100 Turbine Air Motor has large air passages...won't clog or break

Clean Exhaust...no oily exhaust mist means emissions compliance

Aerodynamic Speed Control...prevents starter over-speed

Robust steel & aluminum alloy construction...no plastic or fragile parts

Vaneless Air Motor requires no lubrication of the air/gas supply

Grease-Packed Gearbox Design...no oil sump to check, change or fill

Pre-engaged Pinion Gear...ideal for multiple starter applications (T100-V)

Offset, Overhung Pinion Gear offers fit, flexibility and more pinion options (T100-V)

All TURBOTWIN Engine Air Starters feature grease-packed gears and bearings, and aerodynamic speed control, to provide long, trouble-free operation.

Lightweight rotating elements provide "soft engagement"...extending the life of both ring and pinion gears

Specifications:

T100-V

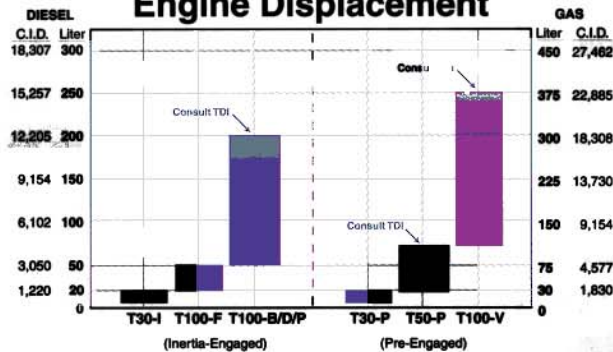
TURBOTWIN™

Engine Air Starters

For Pre-Engaged
and Small-Space
Mounting
Environments



Starter Selection Chart Engine Displacement

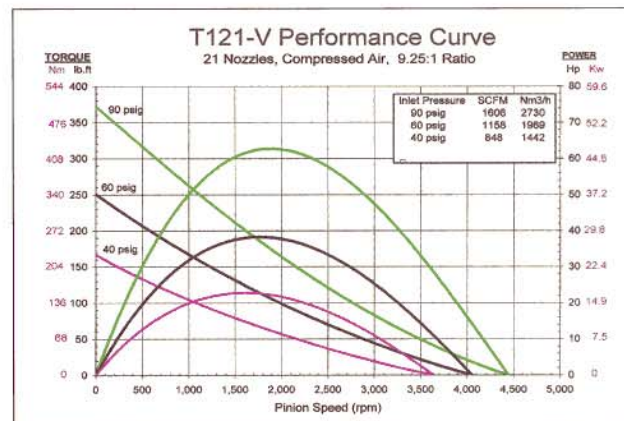
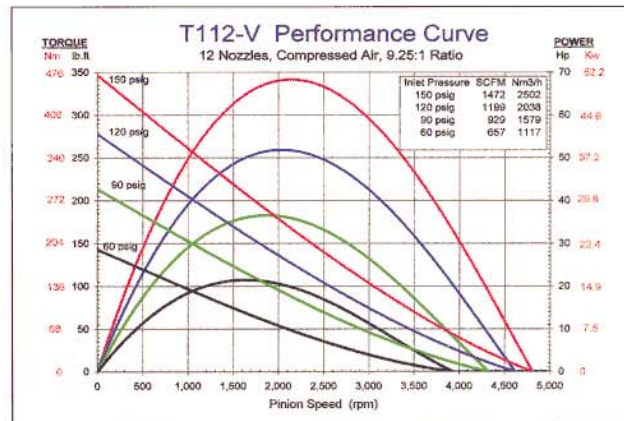
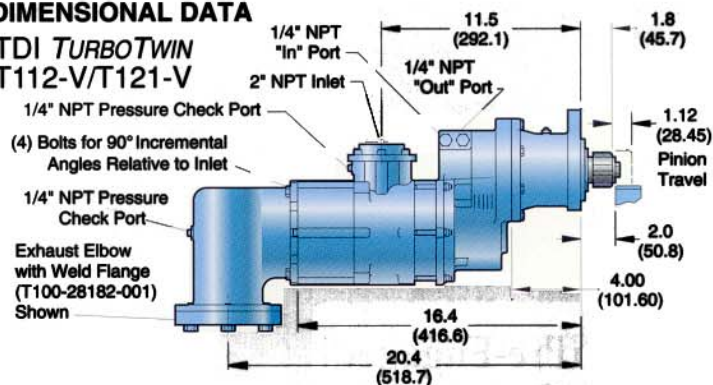


Consult your TDI Distributor and the TDI Selection Guide before choosing a TDI TURBOTWIN starter for any application.

This selection chart shows basic starter capability by engine size. Note the chart shows four-stroke diesel engine size on the left and four-stroke, spark-ignited engine sizes on the right. Always consult TDI for application-specific capability.

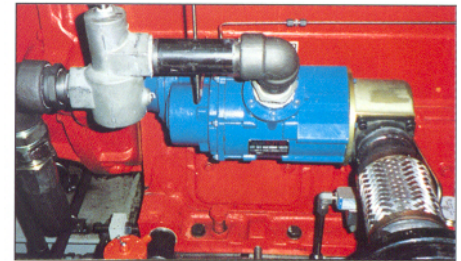
DIMENSIONAL DATA

TDI TURBOTWIN
T112-V/T121-V



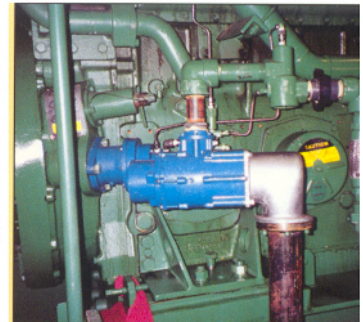
The power of T100
is now pre-engaged.

T100-V's grease-packed for life feature eliminates wear, reduces maintenance, and delivers a significantly longer starting life

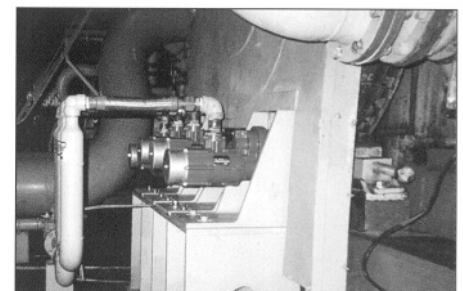


Pressure check ports on both starter inlet and exhaust allow easy troubleshooting of compressed starting air/gas supply valves, filters, piping and regulators. (Shown here TURBOTWIN Model T100-V and TURBOVALVE.)

The Power of T100-V for a Variety of Small-Space, Pre-Engaged Applications



The TURBOTWIN Model T100-V starter's offset and overhung pinion design provides a "bolt-on fit" to most large-displacement industrial engines. It installs in minutes when replacing other turbine-type starters. (Shown here on a Cooper Superior Series 2408G Spark-Ignited Gas Engine.)



A multiple-starter application on a Clark TCV-12 lowered air consumption by 40% over competitive turbine starters originally applied.

SPECIFICATIONS

Engines:	Starts Engines up to 300 Liters (18,000 CID)	Rotation:	(Facing Pinion Orientation) Righthand/clockwise and Lefthand/counter clockwise
Design Configuration:	Pre-Engaged; Offset; Overhung	Air/Gas Supply:	Compressed Air or Natural Gas
Common Pinion Configurations:	6/8 Pitch, 12 Tooth 3.5 Module, 15 Tooth	Lubrication:	Grease-Packed For Life, None Required
Mounting:	SAE 3 Mounting Flange	Gear Ratio:	9.25:1
Horsepower:	68 hp (50.75 kW) Cranking Power at only 150 psig (10.3 BAR)	Custom:	Other models and configurations available. Consult your local TDI distributor.
Weight:	54 lbs. (23 kg)		
Operating Pressure Range:			

MODEL	NOZZLES	PSI	BAR
T112-V	12 (standard)	40 – 150	2.7 – 10.3
T121-V	21 (low pressure)	40 – 90	2.7 – 6.2

Nine and 15 nozzles available for special applications. Consult your TDI distributor for best nozzle configuration.

FOR ENGINE COMPATIBILITY AND STARTER REPLACEMENT INFORMATION, SEE TABLE ON PAGE 23 OR CONSULT YOUR TDI DISTRIBUTOR.

Specifications:

T100-B T100-P

TURBOTWIN™

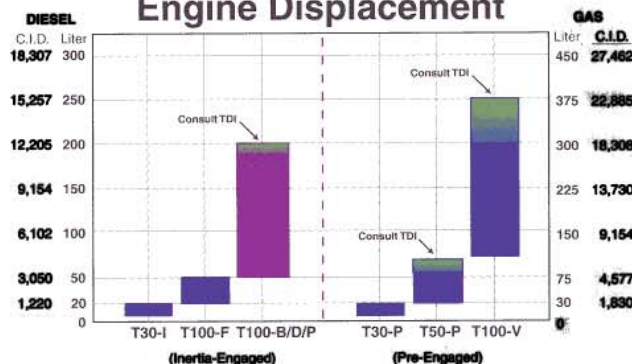
Engine Air Starters

The Most
Popular T100
Configurations



TDI turbine designs feature larger air channels to optimize starting power.

Starter Selection Chart Engine Displacement

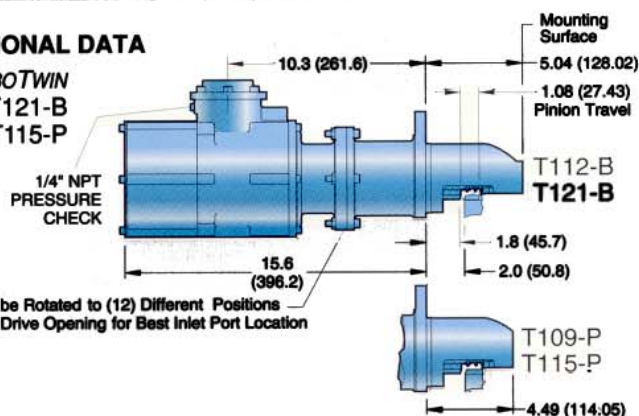


Consult your TDI Distributor and the TDI Selection Guide before choosing a TDI TurboTwin starter for any application.

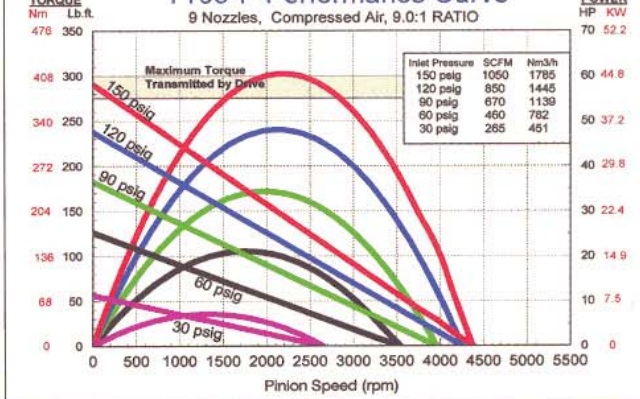
This selection chart shows basic starter capability by engine size. Note the chart shows four-stroke diesel engine size on the left and four-stroke, spark-ignited engine sizes on the right. Always consult TDI for application-specific capability.

DIMENSIONAL DATA

TDI TURBOTWIN
T112-B/T121-B
T109-P/T115-P



T109-P Performance Curve



T112-B / T112-D Performance Curve



For low-pressure version curve, see T121-D performance curve on page 10.

SPECIFICATIONS

Engines:	Starts Engines from 50 (3000 CID) up to 250 Liters (15,000 CID)	Rotation:	(Facing Pinion Orientation) Righthand/clockwise and Lefthand/counter clockwise
Design Configuration:	Inline; Inertia-Engaged	Air/Gas Supply:	Compressed Air or Natural Gas
Common Pinion Configuration:	6/8 Pitch, 12 Tooth (2-inch pitch diameter pinion)	Lubrication:	Grease-Packed For Life, None Required
Mounting:	SAE 3 Mounting Flange		
Horsepower:		Gear Ratio:	
T112-B:	80 hp (60 kW) Cranking Power at 150 psig (10.3 BAR) Max.	T112-B/T121-B:	7.5:1
T121-B:	80 hp (60 kW) Cranking Power at 90 psig (6.2 BAR) Max.	T109-P:	9.0:1
T109-P:	60 hp (41 kW) Cranking Power at 150 psig (10.3 BAR) Max.	Custom:	Other models and configurations available. Consult your local TDI distributor.
Weight:	48 lbs. (22 kg)		

Operating Pressure Range:

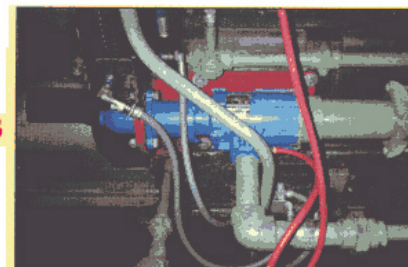
MODEL	NOZZLES	PSI	BAR
T-109-P	9	30 – 150	2 – 10.3
T112-B	12	60 – 150	4.1 – 10.3
T121-B	21	30 – 90	2 – 6.2

For applications in the 60–90 psig (4.1–6.2 BAR) range, consult your TDI distributor for best nozzle configuration.

FOR ENGINE COMPATIBILITY AND STARTER REPLACEMENT INFORMATION, SEE TABLE ON PAGE 23 OR CONSULT YOUR TDI DISTRIBUTOR.

T100-B/P's grease-packed for life feature eliminates wear, reduces maintenance, and delivers a significantly longer starting

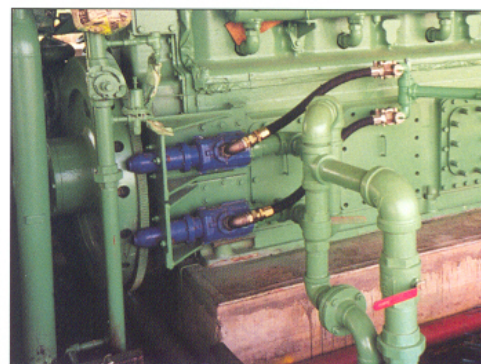
Power and Reliability for Engines up to 300 Liters and Larger.



The TDI TURBO TWIN Starter Model T100-B offers simplicity and a perfect fit, even within the tightest installations. (Shown here, a pair of Model T100-B starters installed on a 65 liter gas integral engine/compressor.)



Model T100-B mounted on a slow-speed spark-ignited engine.



T100-B dual starter mounted on a Worthington SL-10. Simple installation, power and reliability make the T100-B ideal for starting engines up to 300 liters.

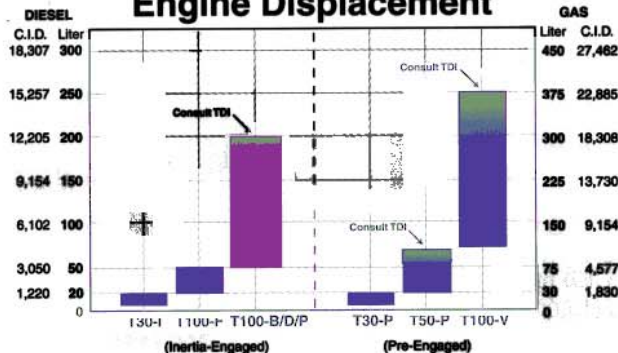
Specifications:

T100-D

TURBOTWIN™

Engine Air Starters

Starter Selection Chart Engine Displacement



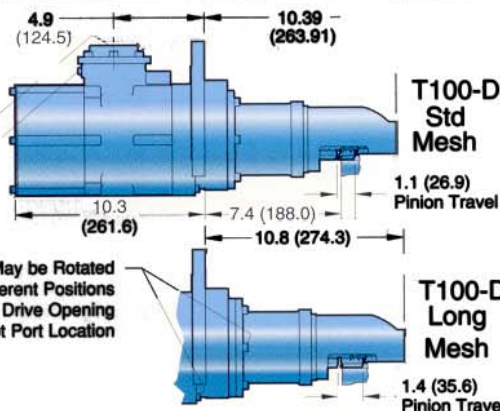
This selection chart shows basic starter capability by engine size. Note the chart shows four-stroke diesel engine size on the left and four-stroke, spark-ignited engine sizes on the right. Always consult TDI for application-specific capability.

DIMENSIONAL DATA

TDI TURBOTWIN
T100-D Standard Mesh
T100-D Long Mesh

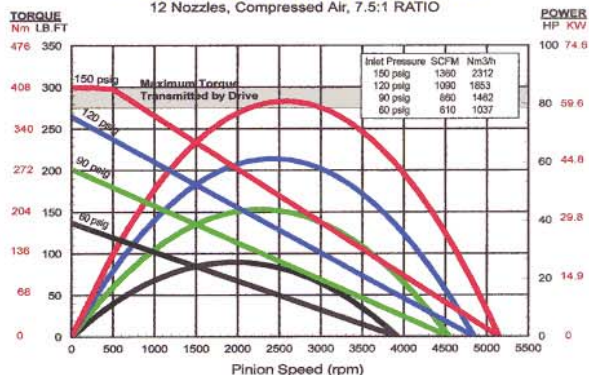
2" NPT Inlet
1/4" NPT Pressure Check

Motor May be Rotated to (6) Different Positions Relative to Drive Opening for Best Inlet Port Location



T112-B / T112-D Performance Curve

12 Nozzles, Compressed Air, 7.5:1 RATIO



T121-B / T121-D Performance Curve

21 Nozzles, Compressed Air, 7.5:1 RATIO



Eliminate remote service trips
with the reliability of T100-D.

SPECIFICATIONS

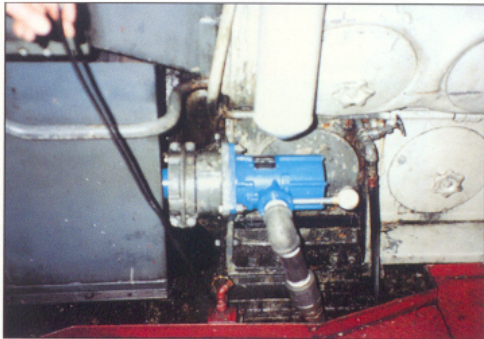
Engines:	Starts Engines up to 250 Liters (15,000 CID)	Rotation:	(Facing Pinion Orientation) Righthand/clockwise and Lefthand/counter clockwise
Design Configuration:	Inline; Inertia-Engaged	Air/Gas Supply:	Compressed Air or Natural Gas
Common Pinion Configuration:	6/8 Pitch, 12 Tooth (2 inch pitch diameter pinion)	Lubrication:	Grease-Packed For Life, None Required
Mounting:	SAE D-Style Flange	Gear Ratio:	7.5:1
Horsepower:		Custom:	Other models and configurations available. Consult your local TDI distributor.
T112-D:	80 hp (60 kW) Max. at 150 psig (10.3 BAR)		
T121-D:	80 hp (60 kW) Max. at 90 psig (6.2 BAR)		
Weight:	70 lbs. (32 kg)		

Operating Pressure Range:

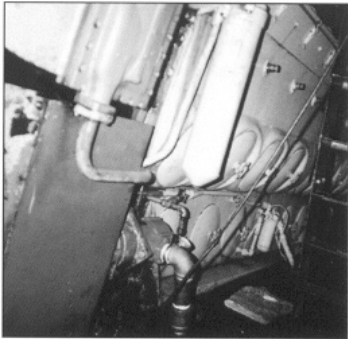
MODEL	NOZZLES	PSI	BAR
T112-D	12	30 – 150	2 – 10.3
T121-D	21	30 – 90	2 – 6.2

For applications in the 60–90 psig (4.1–6.2 BAR) range, consult your TDI distributor for best nozzle configuration.

T100-D's grease-packed for life feature eliminates wear, reduces maintenance, and delivers a significantly longer starting life

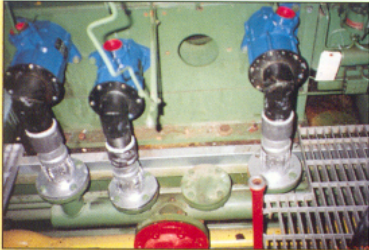


Two views of a T100-D on an EMD 16-567 diesel engine



T100-D was designed specifically to resist marine contaminants like salt air, humidity and pipescale.

Long Cranking Cycles and Remote-Start Reliability Make T100-D Ideal for the Oil and Gas Fields



A trio of T100-Ds on a Clark gas engine provide the reliability to handle the higher cranking speeds.

FOR ENGINE COMPATIBILITY AND STARTER REPLACEMENT INFORMATION, SEE TABLE ON PAGE 23 OR CONSULT YOUR TDI DISTRIBUTOR.

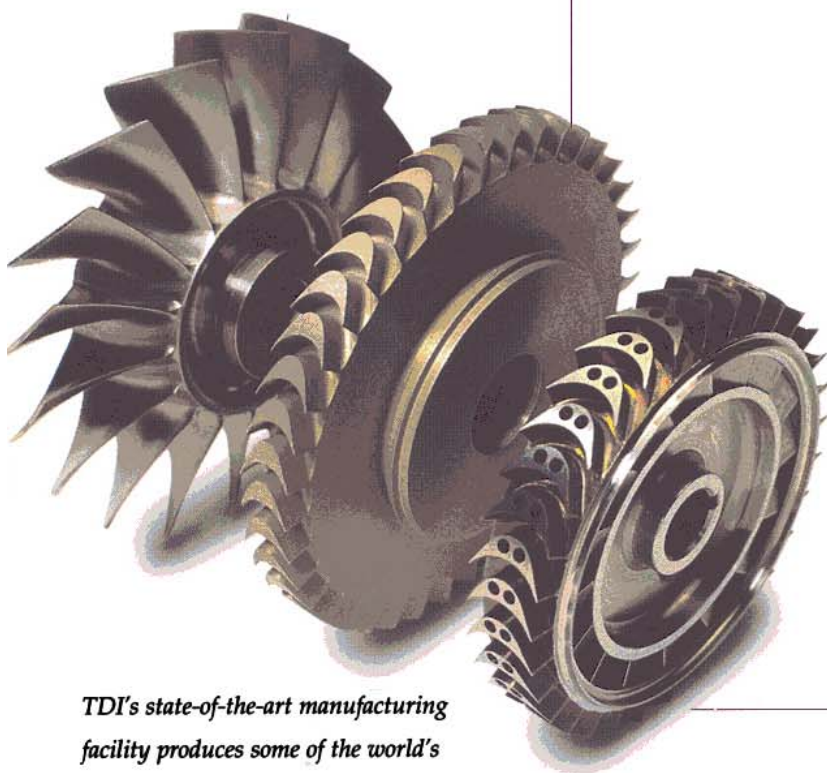
Specifications:

T100-F

TURBOTWIN™

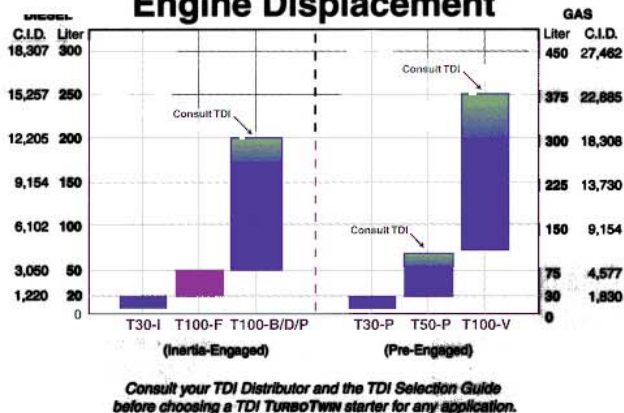
Engine Air Starters

An Economical
Configuration of
T100 for Medium-
Range Engines
from 20–50 Liters



TDI's state-of-the-art manufacturing facility produces some of the world's most sophisticated turbine/compressor designs.

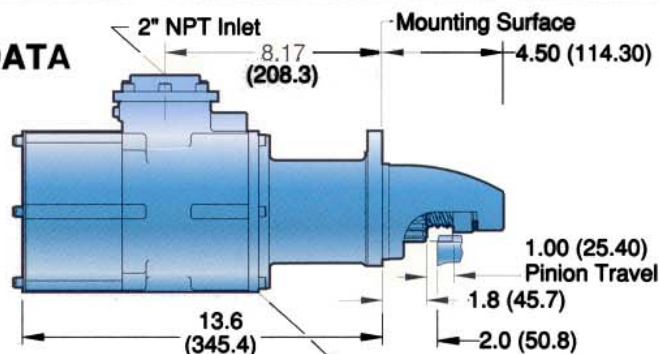
Starter Selection Chart Engine Displacement



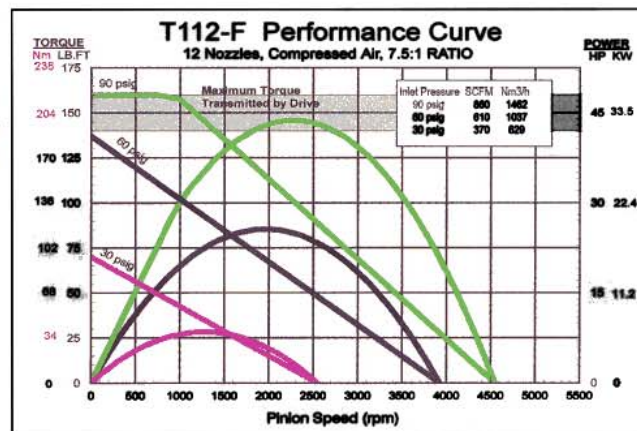
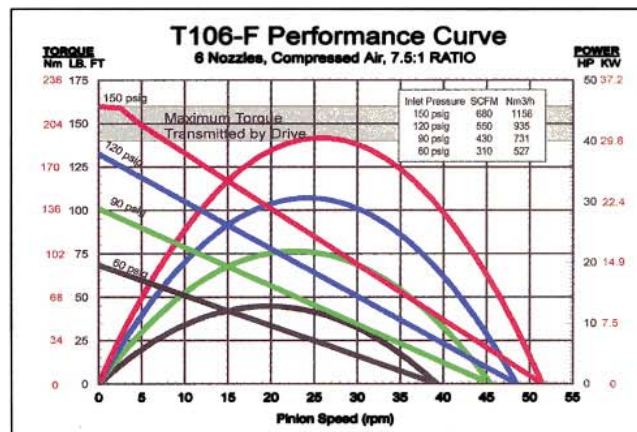
This selection chart shows basic starter capability by engine size. Note the chart shows four-stroke diesel engine size on the left and four-stroke, spark-ignited engine sizes on the right. Always consult TDI for application-specific capability.

DIMENSIONAL DATA

TDI TURBOTWIN
T106-F/T112-F



Motor may be rotated to (12) different positions relative to drive opening for best inlet port location



SPECIFICATIONS

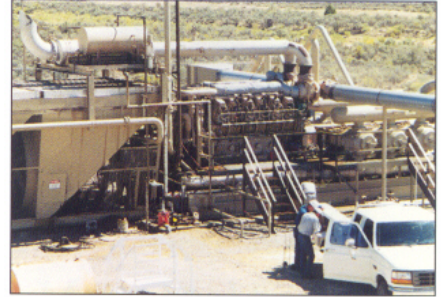
Engines:	Starts Engines up to 50 Liters (3000 CID)	Rotation:	(Facing Pinion Orientation) Righthand/clockwise and Lefthand/counter clockwise
Design Configuration:	Inline; Inertia-Engaged	Air/Gas Supply:	Compressed Air or Natural Gas
Common Pinion Configuration:	6/8 Pitch, 12 Tooth (2 inch pitch diameter pinion)	Lubrication:	Grease-Packed For Life, None Required
Mounting:	SAE 3 Flange, Standard	Gear Ratio:	7.5:1
Horsepower:		Custom:	Other models and configurations available. Consult your local TDI distributor.
T106-F:	44 hp (33 kW) Max. at 150 psig (10.3 BAR)		
T112-F:	44 hp (33 kW) Max. at 90 psig (6.2 BAR)		
Weight:	42 lbs. (19 kg)		
Operating Pressure Range:			

MODEL	NOZZLES	PSI	BAR
T106-F	6	60 – 150	4.1 – 10.3
T112-F	12	30 – 90	2 – 6.2

For applications in the 60–90 psig (4.1–6.2 BAR) range, consult your TDI distributor for best nozzle configuration.

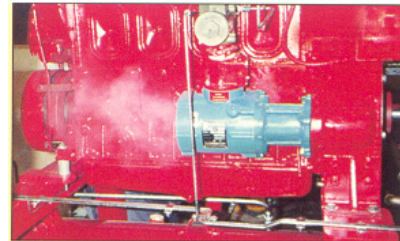
FOR ENGINE COMPATIBILITY AND STARTER REPLACEMENT INFORMATION, SEE TABLE ON PAGE 23 OR CONSULT YOUR TDI DISTRIBUTOR.

T100-F's grease-packed for life feature eliminates wear, reduces maintenance, and delivers a significantly longer starting life



T100-F responsiveness and reliability make sure you're on-line moving gas immediately.

T100-F Provides Big Gear-Trane Cranking Power in a Small Package



This T100-F, mounted on a Detroit Diesel fire pump gas engine, provides the extended 180-second cranking cycle required by the U.S. Coast Guard.



The large channels of TDI turbine blades create an open air path that allows contaminants to pass through rather than get lodged in the starter and cause breakdowns.

TURBOTWIN™ **T50-P** **Series** **Turbine** **Air Starters**

The Lightest, Most
Compact Starters
for Diesel Engines
Up to 70 Liters



TurboTwin turbine blade designs work together to maximize air throughput for added starting power.

The T-50 Turbine Air Starter delivers 40 hp of cranking power for starting medium-size gas and diesel engines. At only 34 lbs. (15.4 kg) and 5.76 in. (146 mm) in diameter, its size-to-power ratio sets the industry standard. Refinements to the TurboTwin design have reduced noise levels below standards previously thought to be unattainable in air starters. It's easily the quietest starter in its class. Additional design refinements have further reduced the number of contact parts which will yield even longer life and provide maintenance-free operation.

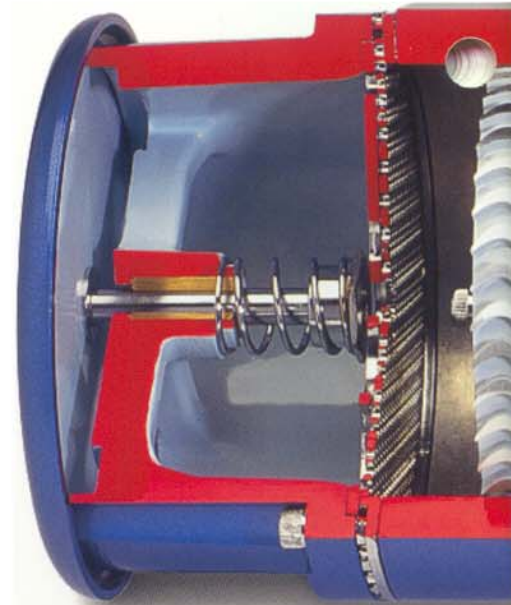
40 hp At Only 34 lbs.

It's A Powerhouse!

T50 is truly a breakthrough design, delivering unparalleled power for engines up to 70 liters. That's over 25% more torque and power than competitive models per unit volume of air—all in a lightweight, compact package.

The World's Most Contaminated Air Has No Affect On T50

The T50's turbine motor has no rubbing vanes to stick, swell, or wear out—dirty, wet air has no effect on internal parts. Contaminated air that clogs, damages and shuts down other starters passes through TurboTwin's open



air path design. The T50's efficiency means you use less air and engines start quicker...even in bitter cold or sweltering heat.

No Compromise On Any TurboTwin Part

T50 uses only high-quality, high-strength steel and aluminum alloys machined to

the industry's tightest tolerances. There's no cutting corners, and definitely no plastic parts as used in other turbine air starters.

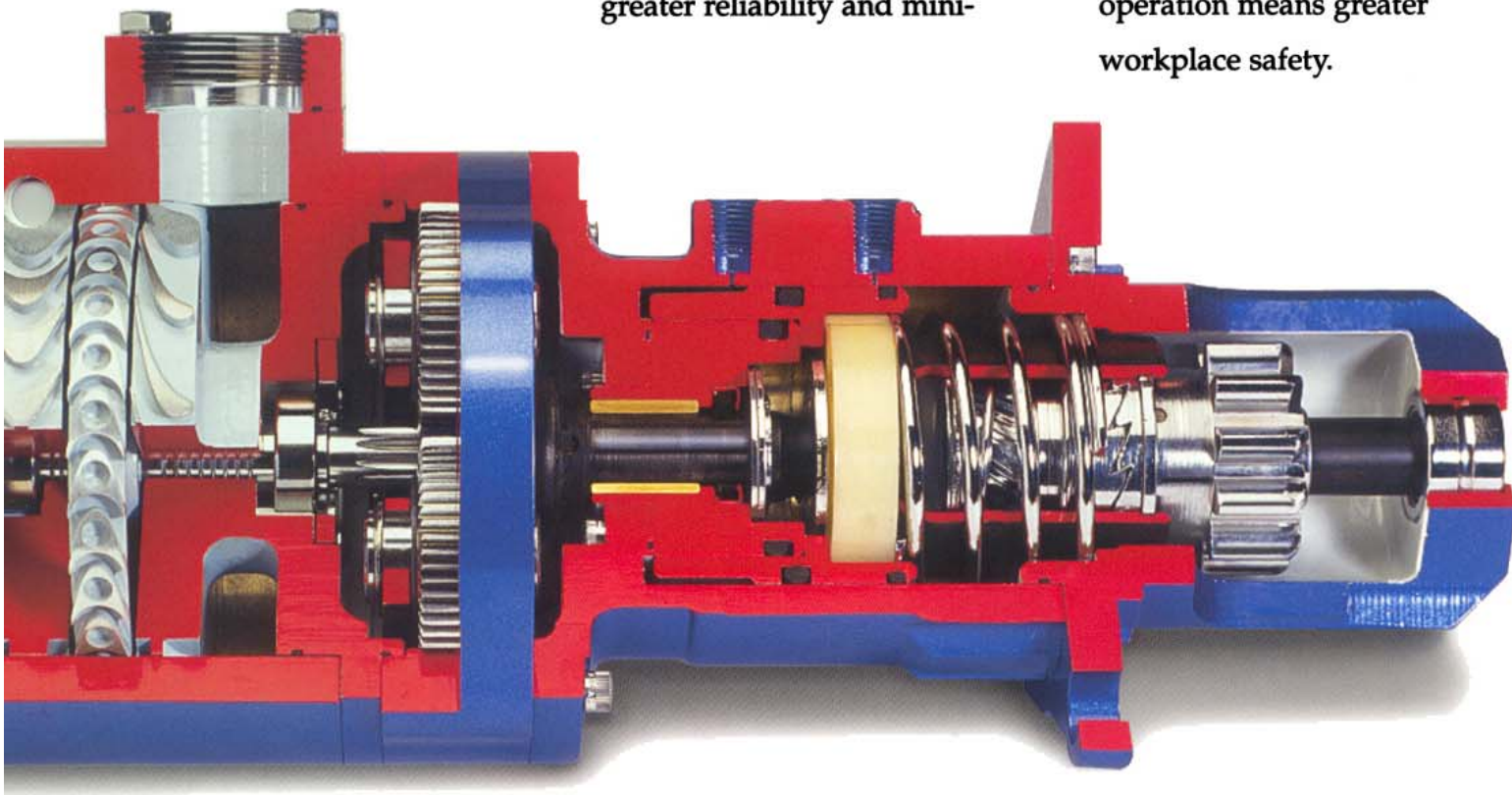
Fewer Moving Parts Means Fewer Repairs

T50 features half the moving parts found on other turbine air starters. Its design yields greater reliability and mini-

mizes part count. This means lower operating costs.

No Oil Means Easier EPA Compliance And A More Reliable Starter

The T50 gearbox is grease-packed for life; there is no need to add starter lubrication and there are no fugitive exhaust emissions. Cleaner operation means greater workplace safety.



T50 Turbine Air Motor has large air passages...won't clog or break

Clean Exhaust...no oily exhaust mist means emissions compliance

Aerodynamic Speed Control...prevents starter over-speed

Vaneless Air Motor requires no lubrication of the air/gas supply

Grease-Packed Gearbox Design...no oil sump to check, change or fill

Pre-engaged Pinion Gear...ideal for multiple starter applications

*All **TURBOTWIN** Engine Air Starters feature grease-packed gears and bearings, and aerodynamic speed control, to provide long, trouble-free operation.*

Lightweight, low-inertia, rotating elements provide "soft engagement"...extending the life of both ring and pinion gears

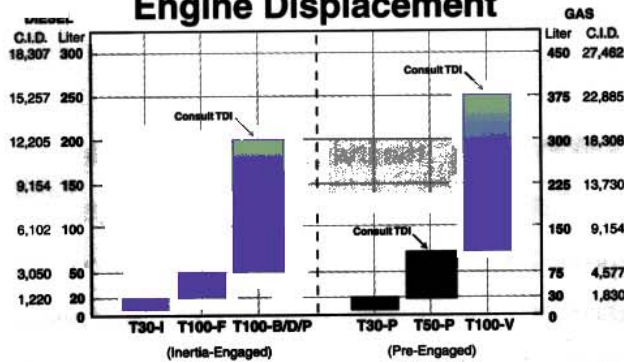
Specifications:

T50-P

TURBOTWIN™

Engine Air Starters

Starter Selection Chart Engine Displacement

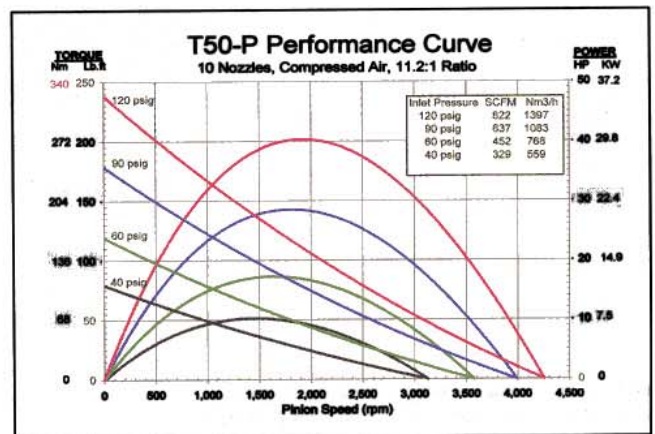
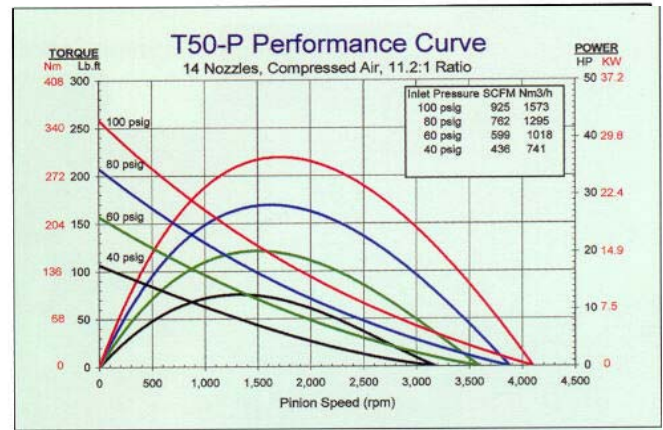
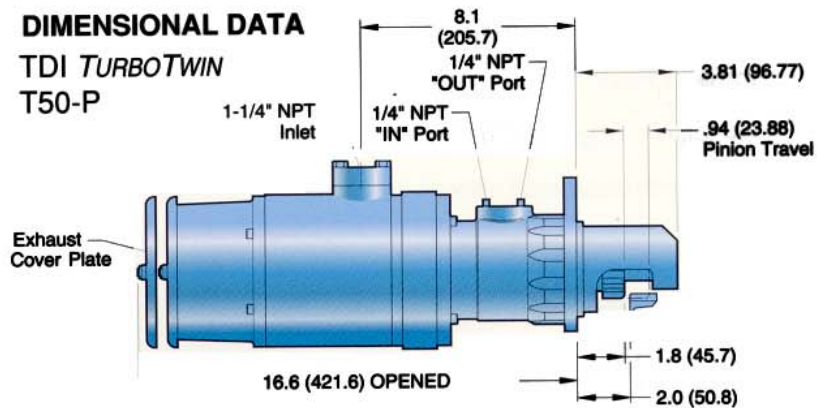


Consult your TDI Distributor and the TDI Selection Guide before choosing a TDI TurboTwin starter for any application.

This selection chart shows basic starter capability by engine size. Note the chart shows four-stroke diesel engine size on the left and four-stroke, spark-ignited engine sizes on the right. Always consult TDI for application-specific capability.

DIMENSIONAL DATA

TDI TURBOTWIN
T50-P



At 34 lbs. and 6" in diameter, the compact T50 delivers 40 hp of cranking power.

SPECIFICATIONS

Engines:	Starts Engines up to 70 Liters (4200 CID)	Rotation:	(Facing Pinion Orientation) Righthand/clockwise and Lefthand/counter clockwise
Design Configuration:	Inline; Pre-Engaged	Air Supply:	Air Only
Common Pinion Configuration:	6/8 Pitch, 11 Tooth	Lubrication:	Grease-Packed For Life, None Required
Mounting:	SAE 3	Gear Ratio:	11.2:1
Horsepower:		Custom:	Other models and configurations available. Consult your local TDI distributor.
Standard:	40 hp (30 kW) Max. at 120 psig (8.3 BAR)		
Low Pressure:	35 hp (26 kW) Max. at 100 psig (6.9 BAR)		
Weight/Size:	34 lbs. (15.4 kg), 6" diameter (152 mm)		

Operating Pressure Range:

MODEL	NOZZLES	PSI	BAR
T508-P	8	45 – 150	3.1 – 10.3
T510-P	10	45 – 120	3.1 – 8.3
T514-P	14	45 – 100	3.1 – 6.9

For applications in the 60–90 psig (4.1–6.2 BAR) range, consult your TDI distributor for best nozzle configuration.

FOR ENGINE COMPATIBILITY AND STARTER REPLACEMENT INFORMATION, SEE TABLE ON PAGE 23 OR CONSULT YOUR TDI DISTRIBUTOR.

T50-P's grease-packed for life feature reduces wear, eliminates starter maintenance, and delivers a significantly longer starter life.



The T50-P's compact envelope and light weight make it a snap to install.

The Small T50 Provides More Than Enough Power to Start Any Mine Haul Truck



The T50-P provides reliable starting in any weather.



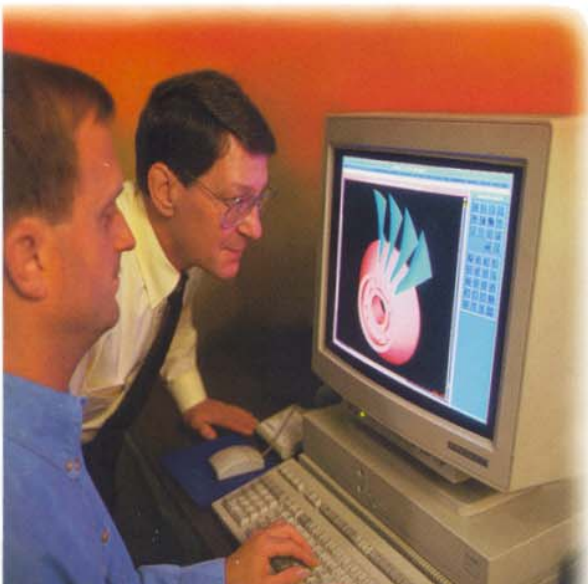
At only 34 lbs., one-person installation is a reality.

TURBOTWIN™

T30-I and T30-P

**Fast, Compact
Starting Power
For Engines
Up to 20 Liters**

TDI's unique aerodynamic element design expertise has been called upon to develop a variety of state-of-the-art aircraft engine simulators used in the aerospace industry.



The T30 generates up to 25% more stall torque than other starters in its class. Its highly efficient twin-turbine motor design gives you more cranking power with less air for faster starts. Unlike starters that require a mechanical automatic trip valve (ATV), the T30 uses aerodynamics to control motor speed, giving you total control over the start cycle.

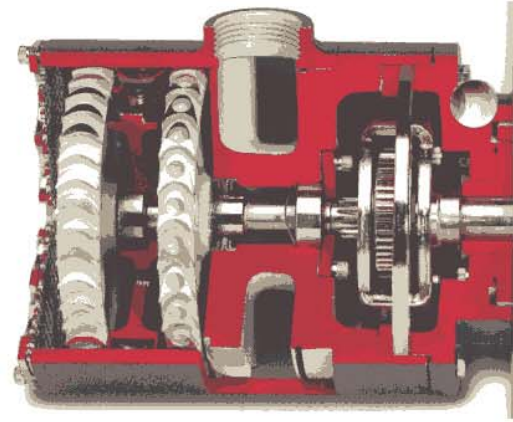
Lightweight

At 29 lbs. (13.2 kg) the T30 is lighter and more compact than other starters in its class.

The Longest Lasting, Most Reliable Engine Starter — Here's Why:

The T30 Turbine is designed to thrive in the world's dirtiest, messiest environments. Wet or contaminated air have no effect on the T30. There are no rubbing vanes to stick, swell or wear out — which translates into longer

T30-P



lasting, more reliable starting, regardless of conditions.

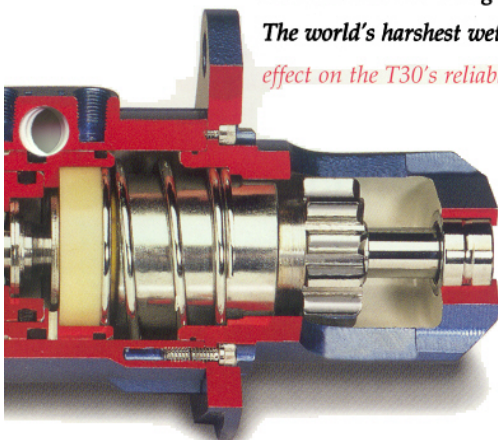
No Mess, No Fugitive Emissions

The vaneless design of the T30 is grease-packed for life, thereby eliminating fugitive starter exhaust emissions caused by messy, oily exhaust residues. Less mess, less maintenance, and a clean environment for your engine makes sense, doesn't it?

No Plastic Parts And Half The Moving Parts Yield Quality

Quality has been designed into the T30. We've minimized the moving parts (less than half the number on competitive models). We refused to compromise the design by cutting corners

*TDI's **TURBOTWIN™** design flourishes in contaminated air. The world's harshest wet and dry environments have no effect on the T30's reliable cranking power*



with "plastic parts." The result is a rugged starter made of high-strength steel and aluminum alloys that lasts longer and delivers significantly more starting cranks than other similar-size systems.

Corrosion protected inside and out.

Weights 29 lbs. and is 11.5 inches from mounting flange to exhaust.

Heavy-duty construction all metal parts. No plastic or composite parts.

Low-consumption one-inch NPT inlet.

Rotatable mounting flange provides installation flexibility.

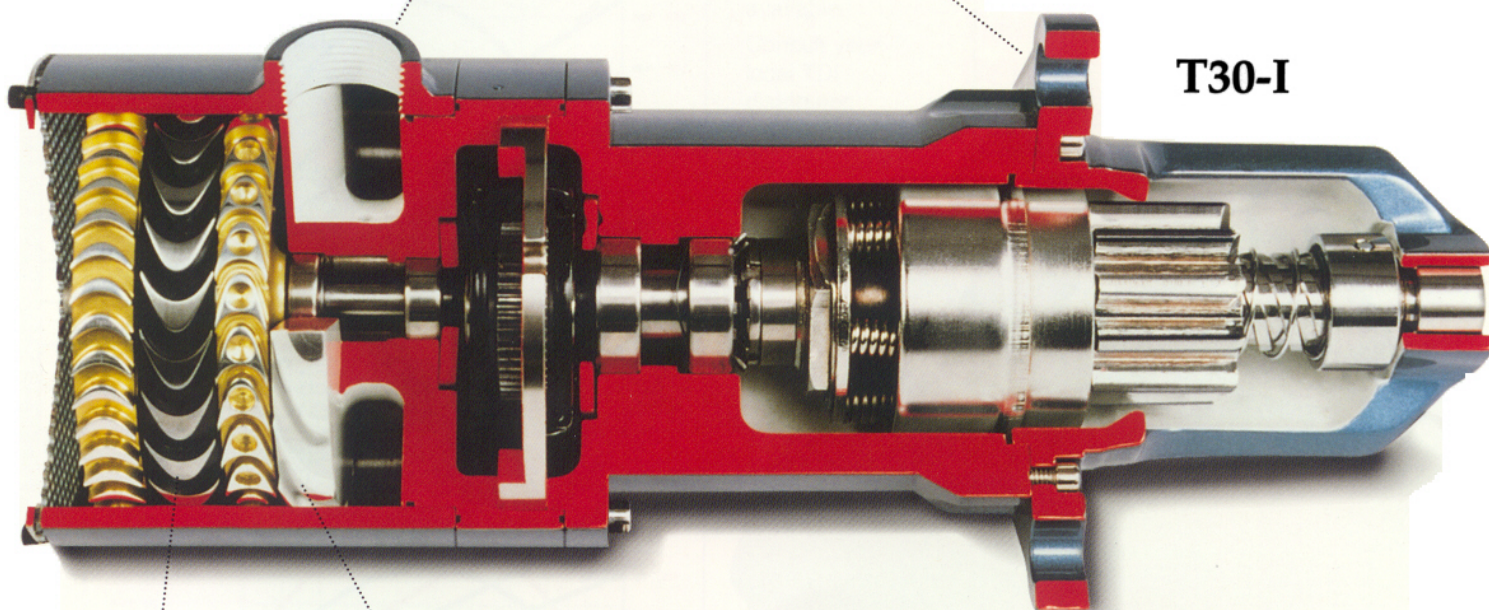
Inertia or Pre-Engaged — T30 Fits

T30-I Inertia Engagement

Soft inertia engagement configuration is ideal for manual operation. Meets high-torque, low-consumption requirements and is natural gas ready.

T30-P Pre-Engaged

Reliable, 100 percent pre-engagement system for high-duty cycles. Features a posi-tork drive with overrunning clutch. System requires a pilot-controlled relay valve such as the TDI TurboValve™.



Aerodynamic speed control prevents over-speed.

Vaneless turbine motor is dependable even on dirty, wet air/gas.

Environmentally safe with no required lubrication of the drive air/gas, bearings, or gears.

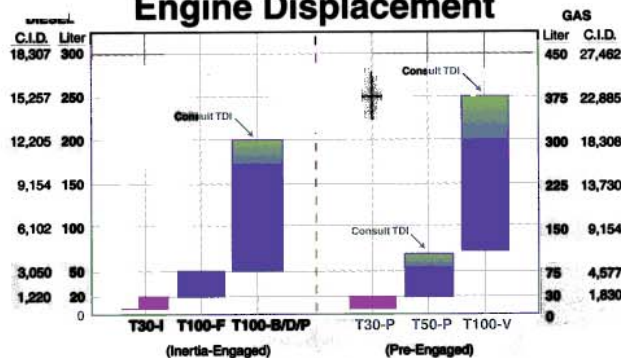
No oil sumps to check and fill.

Half the moving parts of other turbine starters. All parts are individually replaceable.

Specifications:

T30-I T30-P TURBOTWIN™ Engine Air Starters

Starter Selection Chart Engine Displacement

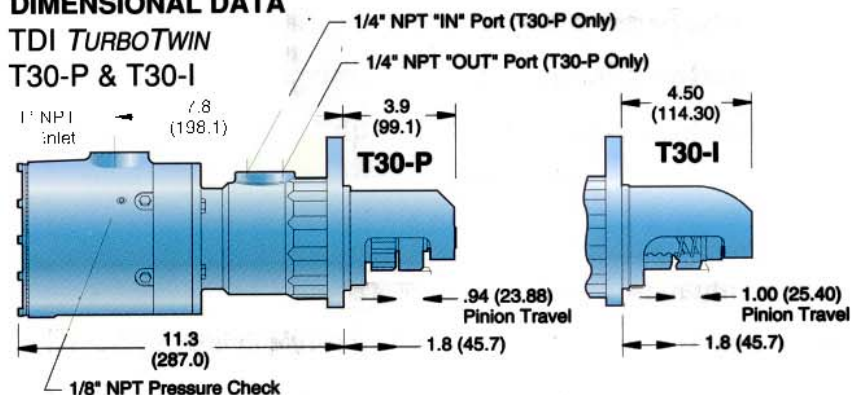


This selection chart shows basic starter capability by engine size. Note the chart shows four-stroke diesel engine size on the left and four-stroke, spark-ignited engine sizes on the right. Always consult TDI for application-specific capability.

Consult your TDI Distributor and the TDI Selection Guide before choosing a TDI TURBOTWIN starter for any application.

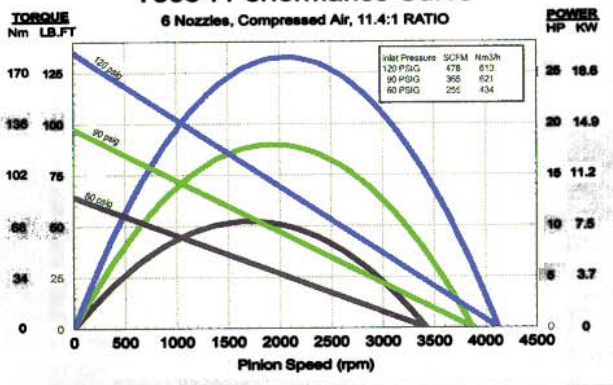
DIMENSIONAL DATA

TDI TURBOTWIN
T30-P & T30-I



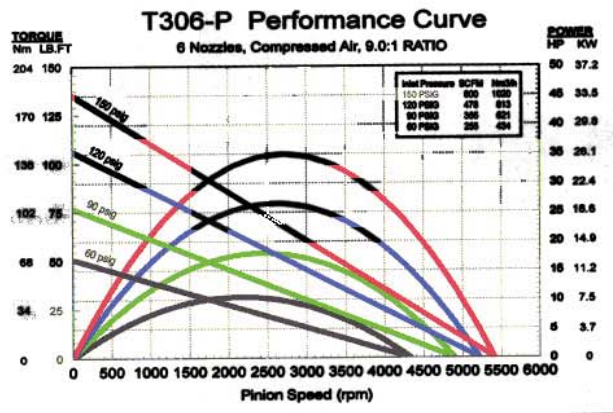
T306-I Performance Curve

6 Nozzles, Compressed Air, 11.4:1 RATIO



T306-P Performance Curve

6 Nozzles, Compressed Air, 9.0:1 RATIO



Lots of torque with low air flow sets T30 as the standard for cranking power in engines up to 20 liters.

SPECIFICATIONS

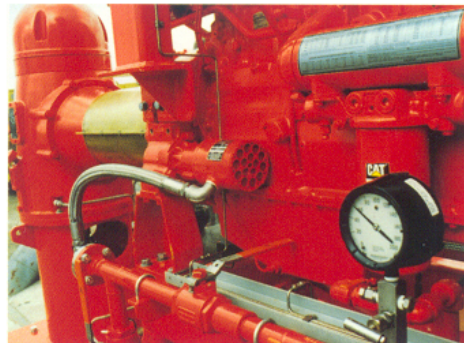
Engines:	Starts Engines up to 20 Liters (1200 CID)	Rotation:	(Facing Pinion Orientation) Righthand/clockwise and Lefthand/counter clockwise
Design Configuration:		Air/Gas Supply:	Compressed Air or Natural Gas
T30-I	Inertia-Engaged		
T30-P	Pre-Engaged		
Common Pinion Configurations:	6/8 Standard, 11 Tooth 8/10 Pitch, 12 Tooth	Lubrication:	Grease-Packed For Life, None Required
Mounting:	SAE 3 Flange SAE 1 Flange (for P only)		
Horsepower:	21 hp (15.65 kW) Cranking Power at only 120 psig (8 BAR) 34 hp (25.4 kW) Max.	Gear Ratio:	T30-I 11:1 T30-P 9:1
	29 lbs. (13.2 kg)	Custom:	Other models and configurations available. Consult your local TDI distributor.
Operating Pressure Range:			

MODEL	NOZZLES	PSI	BAR
T303-I	3 (for Small Engines)	150	10.3
T306-I	6 (Standard)	120	8.3
T312-I	12 (Low Pressure)	60	4.1
T303-P	3 (for Small Engines)	150	10.3
T306-P	6 (Standard)	150	10.3
T312-P	12 (Low Pressure)	Consult TDI	Consult TDI

For applications in the 60–90 psig (4.1–6.2 BAR) range, consult your TDI distributor for best nozzle configuration.

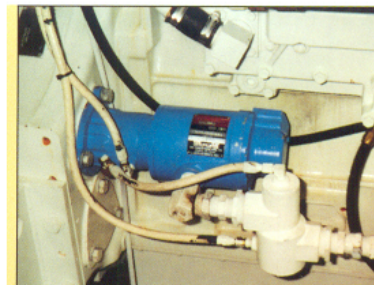
FOR ENGINE COMPATIBILITY AND STARTER REPLACEMENT INFORMATION, SEE TABLE ON PAGE 23 OR CONSULT YOUR TDI DISTRIBUTOR.

T30's grease-packed for life feature eliminates wear, reduces maintenance, and delivers a significantly longer starting life

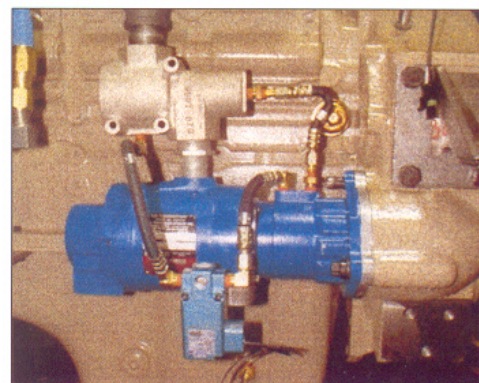


T306-I mounted on Caterpillar 3406 Engine for fire pump application

In the Oil Field or at Sea, *TURBOTWIN™* Delivers Unequalled Reliability



Model T306-P on Luggar Marine Diesel Engine



T306-P factory-installed on a Cummins N14 engine

TURBOTWIN™ Valves and Accessories

TDI offers a wide variety of valves, fittings and accessories to help maximize the efficiency of your TurboTwin Starters. Featured here are some of the more popular items. For specific order numbers or additional accessory needs, contact your local distributor or visit our website at www.tdiairstarters.com.



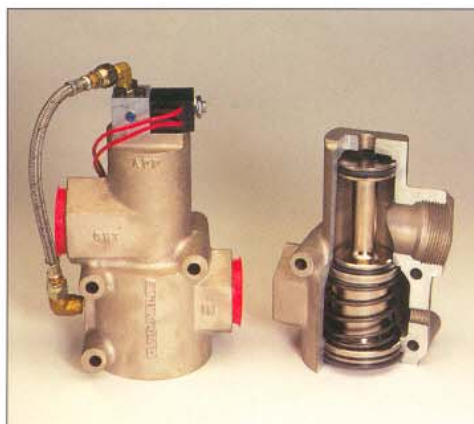
Control Valves

TDI offers both a manual pushbutton and DC solenoid version of its popular control valve for pilot operation of the TDI relay valve.



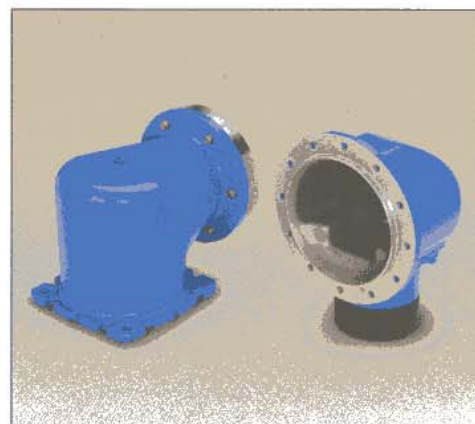
Exhaust Fittings for T30

Muffler and exhaust fittings help manage air discharge on the T30 series air starters.



TurboValve Control Relay Valves

Both manual and electrical pilot-operated TurboValves feature high flow capacity which reduces pressure drop through the valve, making it versatile for a wide range of applications. The electrical version features an integrated solenoid that eliminates extra plumbing and fittings.



Exhaust Elbows for T100

These elbows channel air exhaust for T100 and T100-V starters.



Air Strainers

This is an ideal attachment that helps assure long starter life by pre-filtering air or gas that is contaminated.



Exhaust Fittings for T100

These fittings channel air exhaust for T100 air starters.

TURBOTWIN™

Air Starters Selection Guide

This selection guide will help you retrofit or select the appropriate TurboTwin Air Starter for your engine. Engines are listed by size in liters and by make with the corresponding TurboTwin model number across from it. This chart does not list all compatible engines. For questions concerning other engines, call the factory at 937-898-9600.

LITERS	ENGINE MAKE/MODEL	TDI MODEL NUMBER	LITERS	ENGINE MAKE/MODEL	TDI MODEL NUMBER
6 - 20	BUDA 6DAS516 6DAS Series 844 D516 Series 1742 6DA844 Series 1879 6DHG Series 2505	T306-I Inertia engaged, std. pressure RH or LH rotation T312-I Inertia engaged, low pressure RH or LH rotation T306-P Pre-engaged, std. pressure RH or LH rotation	20 - 70	CATERPILLAR D3412 3500 Series D349 D397 D398 D399 D379 D386 CUMMINS KTA38/2300 QSK 38 KTA50/3067 VT1200 NH12 L-600 DETROIT DIESEL 8V149 16V92 16V149 16V149TIB 20V149 20V149	T106-F Inertia engaged, std. pressure RH or LH rotation T112-F Inertia engaged, low pressure RH or LH rotation T510-P Pre-engaged, std. pressure RH or LH rotation, Air Only T514-P Pre-engaged, low pressure RH or LH rotation, Air Only
	CATERPILLAR D3304 3208 3145 3160 D333C 3306 D343			CUMMINS QSK 45 QSK 60 DETROIT DIESEL 12V2000 16V2000	T510-Y Pre-engaged, std. pressure RH or LH rotation, Air Only T514-Y Pre-engaged, low pressure RH or LH rotation, Air Only
	CUMMINS 6CT C Series			DETROIT DIESEL Series 4000	T109-V Pre-engaged, std. pressure RH or LH rotation T115-V Pre-engaged, low pressure RH or LH rotation
	CATERPILLAR D3406 D3408 CUMMINS L10 N Series M11 K19 DETROIT DIESEL 3V71 4V71 6V53 8V92 8V53 Series 60 6V71 12V71 6V92 12V92 8V71 16V71 8V2000	T306-I Inertia engaged, std. pressure RH or LH rotation T312-I Inertia engaged, low pressure RH or LH rotation T306-P Pre-engaged, std. pressure RH or LH rotation	Above 70	ALCO Series 251 CATERPILLAR D3606 D3612 D3608 D3616 EMD 20-645 20-710 WARTSILA W200V16 W200V18 WARTSILA W170V18 EMD 8-645 16-645 12-645 8-498	T109-V Pre-engaged, std. pressure RH or LH rotation T115-V Pre-engaged, low pressure RH or LH rotation T510-P Pre-engaged, std. pressure RH or LH rotation, Air Only T109-B Inertia engaged, std. pressure RH or LH rotation T115-B Inertia engaged, low pressure RH or LH rotation T109-V Pre-engaged, std. pressure RH or LH rotation T115-V Pre-engaged, low pressure RH or LH rotation
	MAN D2565 D2530 D2566 D2542 D2538	T306-Y Pre-engaged, std. pressure RH or LH rotation			
	RENAULT MARINE RC215 RC600 RC285 RC480 RC335				
	MWM Series 232 D916-6	T306-Y Pre-engaged, std. pressure RH or LH rotation			
	SCANIA DS9				
	WARTSILA W170L6 W170L8 W170L12	T510-P Pre-engaged, std. pressure RH or LH rotation, Air Only			

The selection information is to be used merely as a guideline. For complete details about a starter or an application, please contact the factory or your authorized distributor.

What the World's Best Engine Mechanics Will Tell You About Quality Starters.



Not a Lot.

There's a mystique associated with engine components that don't break down. These parts are rarely serviced. Almost never "opened up." Consequently, there's not much known about them. They just work.

Conversely, you'll hear mechanics talk a lot about starters that fail. You'll hear about dirt in the gears. Vanes that swell. Turbines damaged by pipe scale or corrosion. You'll hear the frustration of what sour gas or contaminated air does to the inner workings of a starter. Or about salt air, water, dirt, sand, mud and oil that work their way into a

starter and shut it down and the hassle of having to remove one.

So what will these guys tell you about **TURBOTWIN™** Air Starters? Not a lot. Other than the fact that they just keep working.

Distributed by:

TDI
TECH DEVELOPMENT INC.
www.tdiairstarters.com

Anything Less Than a *TURBOTWIN* Air Starter is a Compromise

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