TDI *TurboTwin™*

Air Starters For

Built For Long Cranking Cycles and Long Term Reliability

TDI
TECH DEVELOPMENT INC.
www.tdiairstarters.com

Contents

For Oil and Gas Engines,

Anything Less Than a TURBOTWIN™ Starter is a Compromise.

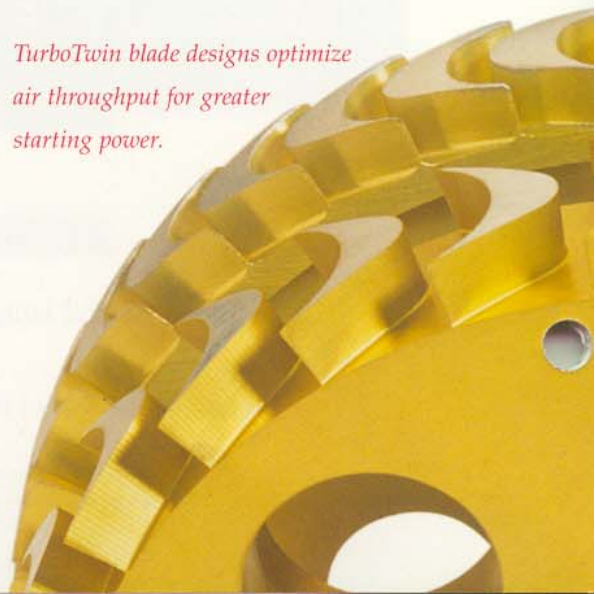
If you're not "making hole" or "on-line" moving gas when you press that button, you're losing money. Lots of money. That's why selecting a reliable engine starter is so important.

The TurboTwin line of turbine air starters is the recognized leader in dependable starts for the oil and gas industry. They last longer. Require no maintenance. And are designed specifically to handle the unique challenges of remote starts.

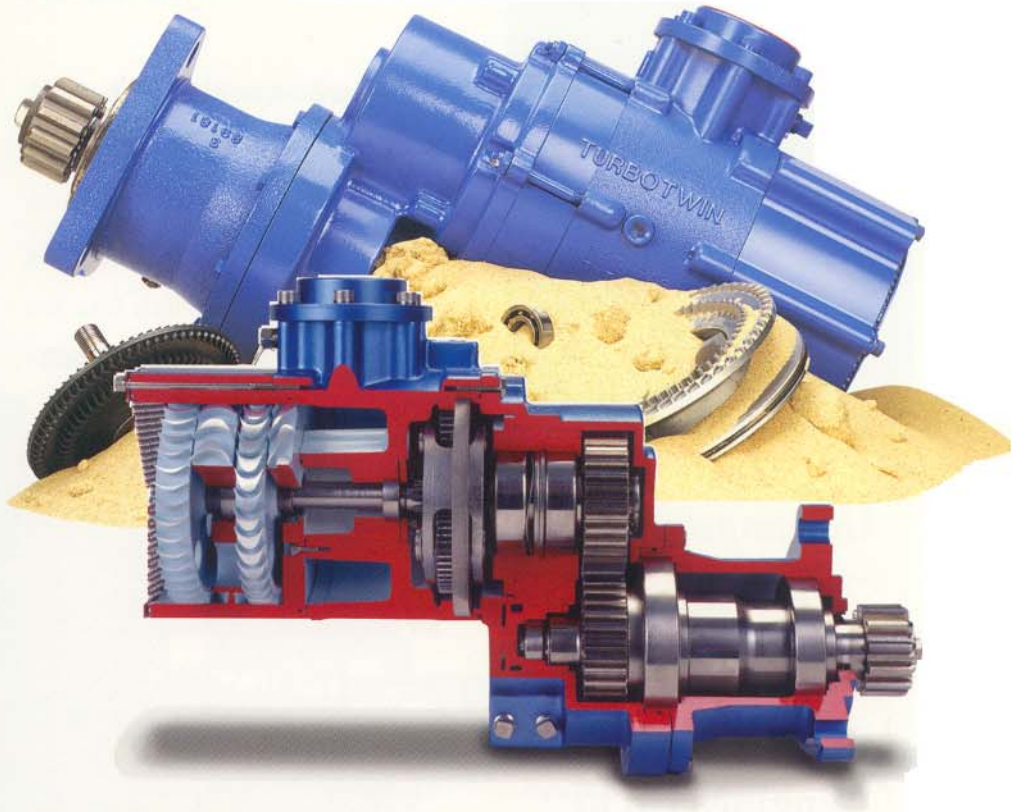
Dirty air and sour gas have no effect on TurboTwin. Our unique aerodynamic speed control regulates the starting process and protects against gear box burnout.

Nothing lasts as long as a TurboTwin.

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 quality to last longer than any other starter on the water?

High-Performance TurboTwin Starters are the long-lasting alternative to vane-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 no effect on the T100. That's because the T100's superior design effectively manages these problems. Here's how:

Unparalleled aerodynamic elements manufacturing experience makes TurboTwin the leader in power and reliability.

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 aerodynamic 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

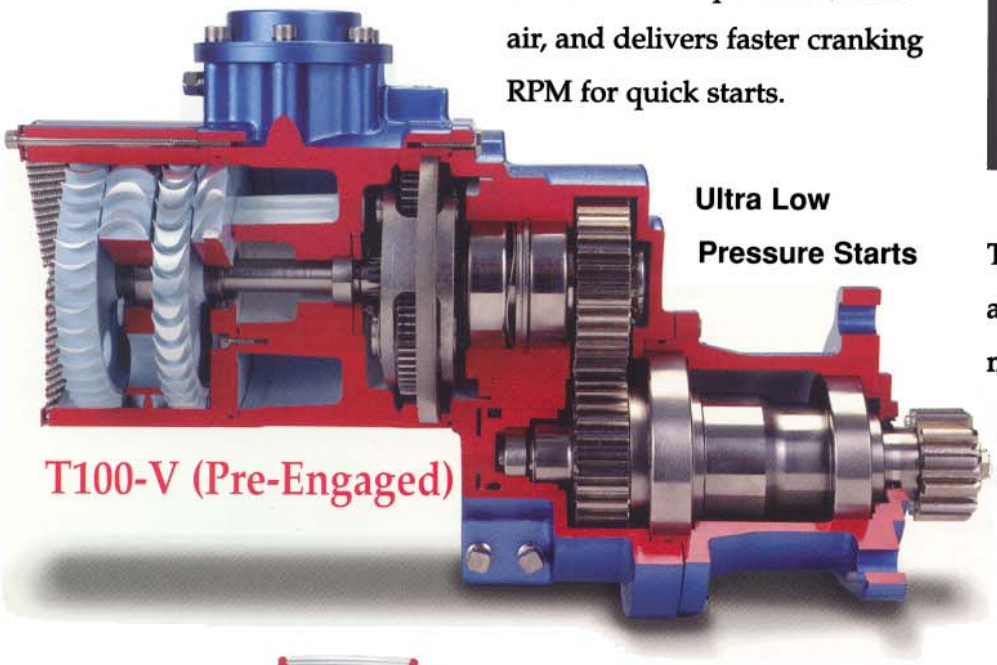
The T100 is grease-packed for life so there is no need for oil

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

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

More Power, Faster Starts

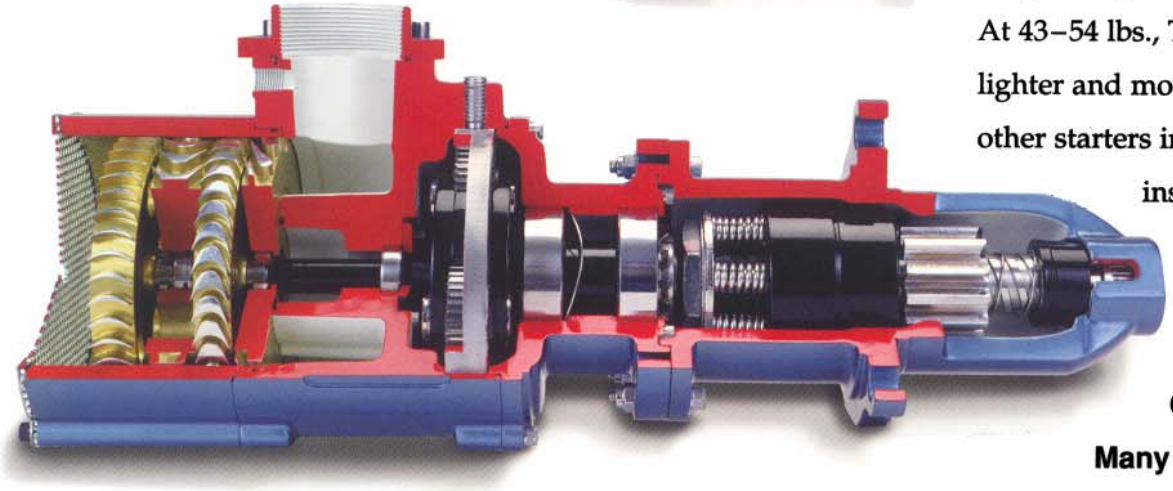
TurboTwin produces up to 25% more horsepower and a superior turbine torque on a unit of air, and delivers faster cranking RPM for quick starts.



T100-V (Pre-Engaged)

Ultra Low Pressure Starts

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.



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

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.

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.

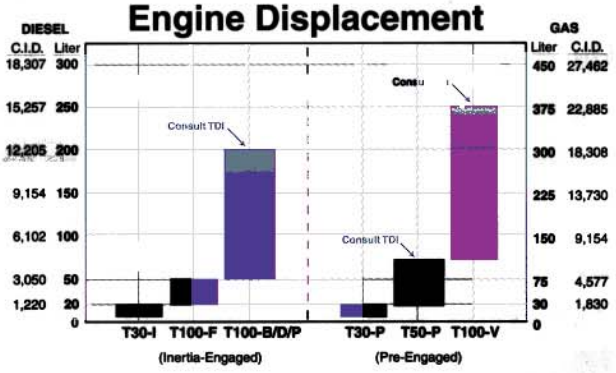
Specifications:

T100-V

TURBOTWIN™ Engine Air Starters

For Pre-Engaged and Small-Space Mounting Environments

Starter Selection Chart
Engine Displacement

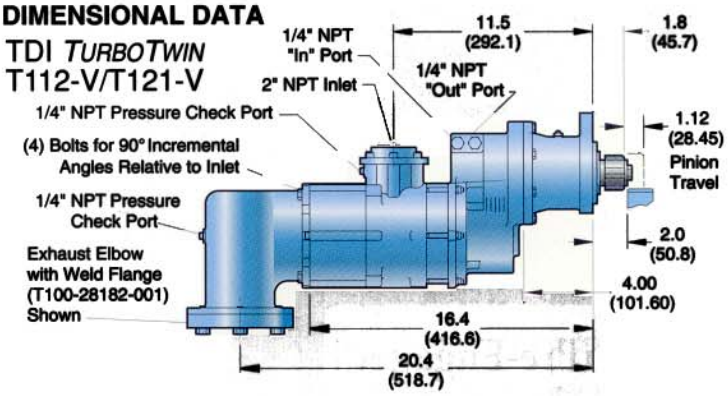


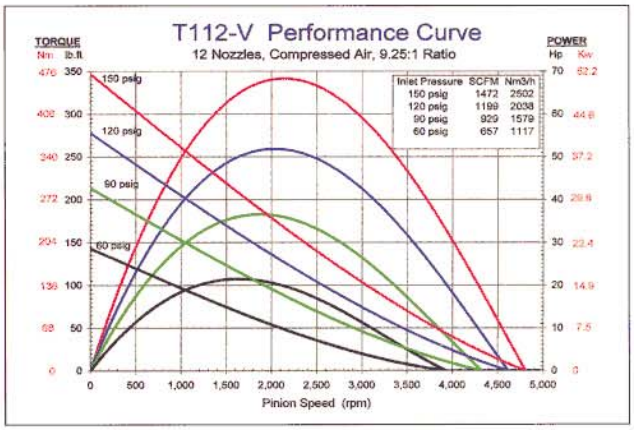
Consult your TDI Distributor and the TDI Selection Guide before choosing a TDI TurboTwin starter for any application.

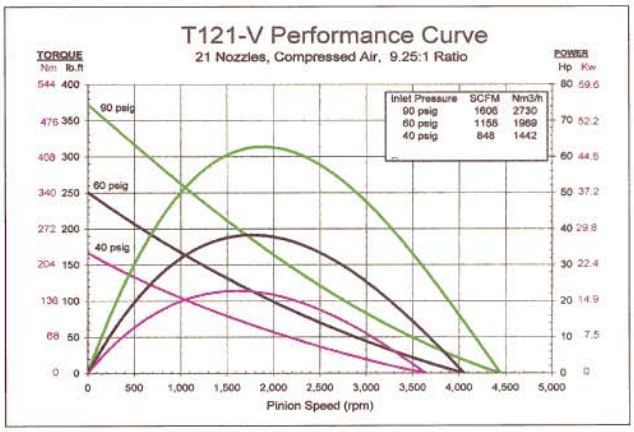
This selection chart shows basic starter capability by engine size. Note the chart shows four-stroke diesel engine size on the left and four-stroke, spark-ignited engine sizes on the right. Always consult TDI for application-specific capability.

DIMENSIONAL DATA

TDI *TURBOTWIN*
T112-V/T121-V







The power of T100 is now pre-engaged.

T100-V's grease-packed for lif
feature eliminates wear, redu
maintenance, and delivers a
sign antly l ger starting lif

SPECIFICATIONS

Engines: Starts Engines up to 300 Liters (18,000 CID)

Design Configuration: Pre-Engaged; Offset; Overhung

Common Pinion Configurations: 6/8 Pitch, 12 Tooth
3.5 Module, 15 Tooth

Mounting: SAE 3 Mounting Flange

Horsepower: 68 hp (50.75 kW) Cranking Power at only 150 psig (10.3 BAR)

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.

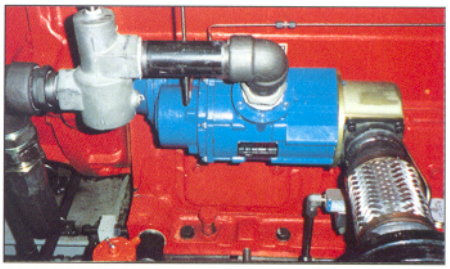
Rotation: (Facing Pinion Orientation) Righthand/clockwise and Lefthand/counter clockwise

Air/Gas Supply: Compressed Air or Natural Gas

Lubrication: Grease-Packed For Life, None Required

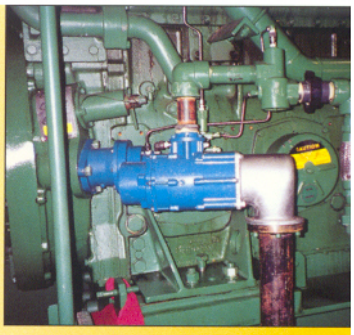
Gear Ratio: 9.25:1

Custom: Other models and configurations available. Consult your local TDI distributor.

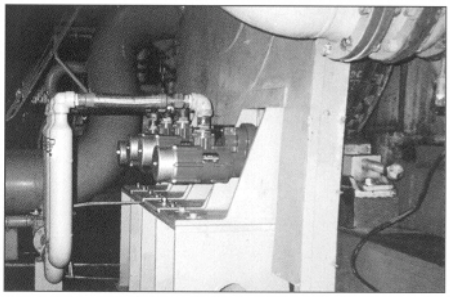


Pressure check ports on both starter inlet and exhaust allow easy trouble-shooting *of compressed starting air/gas supply valves, filters, piping and regulators. (Shown here TURBOTWIN Model T100-V and TURBOVALVE.)*

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.*

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

Specifications:

T100-B
T100-P

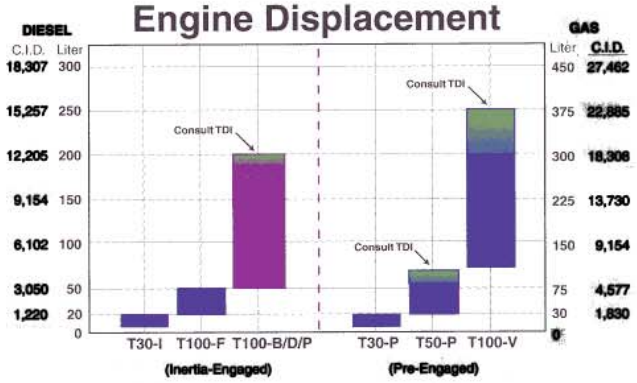
TURBOTWIN™ Engine Air Starters

The Most Popular T100 Configurations

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

Starter Selection Chart

Engine Displacement

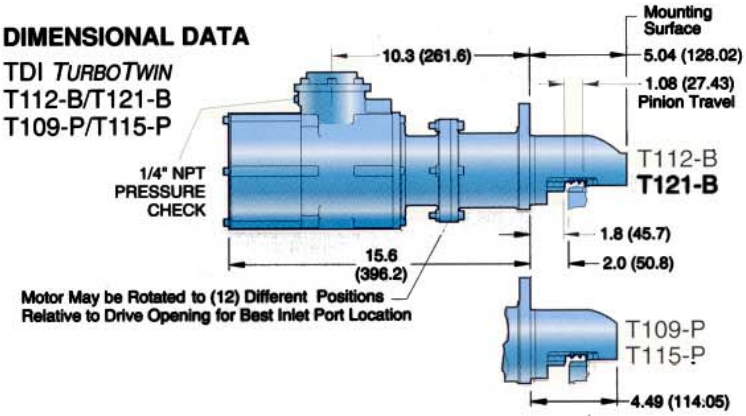


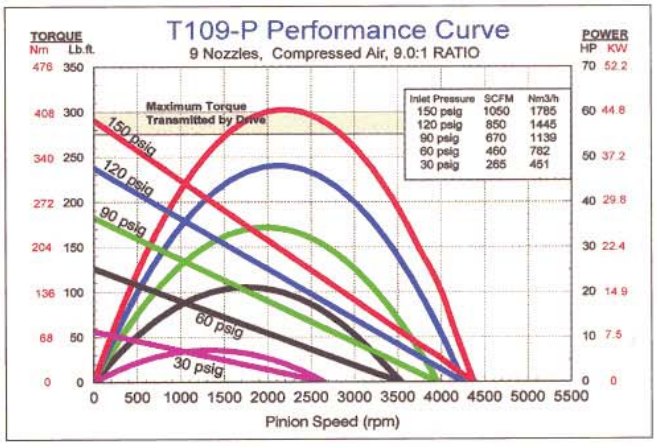
This selection chart shows basic starter capability by engine size. Note the chart shows four-stroke diesel engine size on the left and four-stroke, spark-ignited engine sizes on the right. Always consult TDI for application-specific capability.

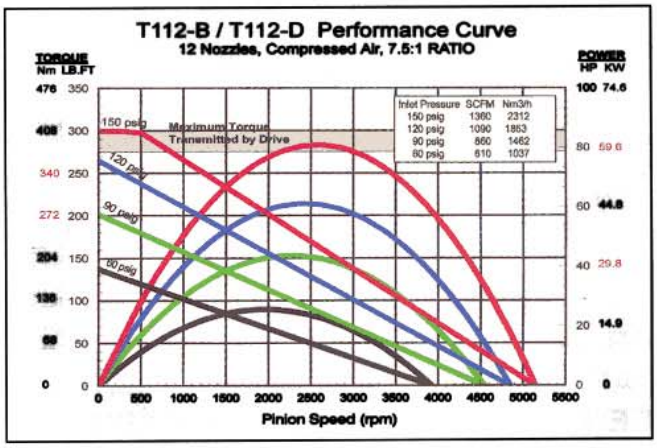
Consult your TDI Distributor and the TDI Selection Guide before choosing a TDI TURBOTWIN starter for any application.

DIMENSIONAL DATA

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







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

T100-B/P's grease-packed fo ife feature eliminates wear, redu maintenance, and delivers a significantly longer starting

SPECIFICATIONS

Engines:	Starts Engines from 50 (3000 CID) up to 250 Liters (15,000 CID)
Design Configuration:	Inline; Inertia-Engaged
Common Pinion Configuration:	6/8 Pitch, 12 Tooth (2-inch pitch diameter pinion)
Mounting:	SAE 3 Mounting Flange
Horsepower:	
T112-B:	80 hp (60 kW) Cranking Power at 150 psig (10.3 BAR) Max.
T121-B:	80 hp (60 kW) Cranking Power at 90 psig (6.2 BAR) Max.
T109-P:	60 hp (41 kW) Cranking Power at 150 psig (10.3 BAR) Max.
Weight:	48 lbs. (22 kg)
Operating Pressure Range:	

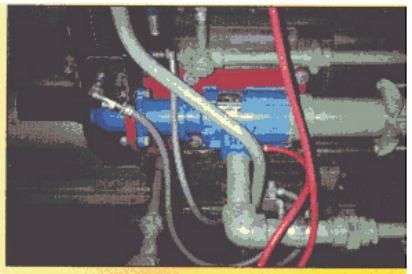
Rotation:	(Facing Pinion Orientation) Righthand/clockwise and Lefthand/counter clockwise
Air/Gas Supply:	Compressed Air or Natural Gas
Lubrication:	Grease-Packed For Life, None Required
Gear Ratio:	
T112-B/T121-B:	7.5:1
T109-P:	9.0:1
Custom:	Other models and configurations available. Consult your local TDI distributor.

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.

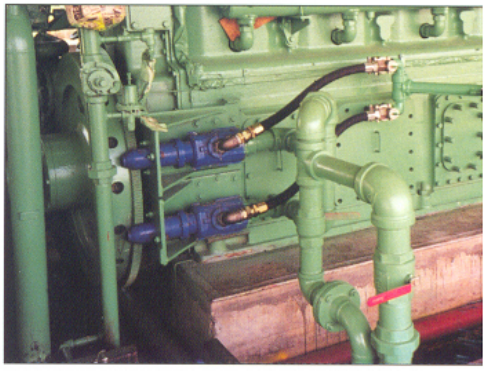
FOR ENGINE COMPATIBILITY AND STARTER REPLACEMENT INFORMATION, SEE TABLE ON PAGE 23 OR CONSULT YOUR TDI DISTRIBUTOR.

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



The TDI *TurboTwin* 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.*



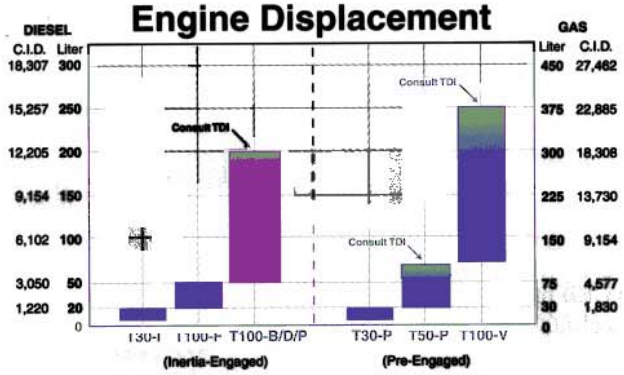
T100-B dual starter *mounted on a Worthington SL-10. Simple installation, power and reliability make the T100-B ideal for starting engines up to 300 liters.*

Specifications:

T100-D

TURBOTWIN™ Engine Air Starters

Starter Selection Chart
Engine Displacement

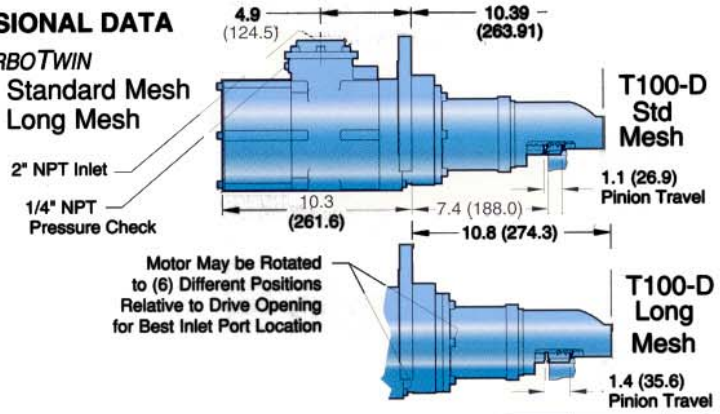


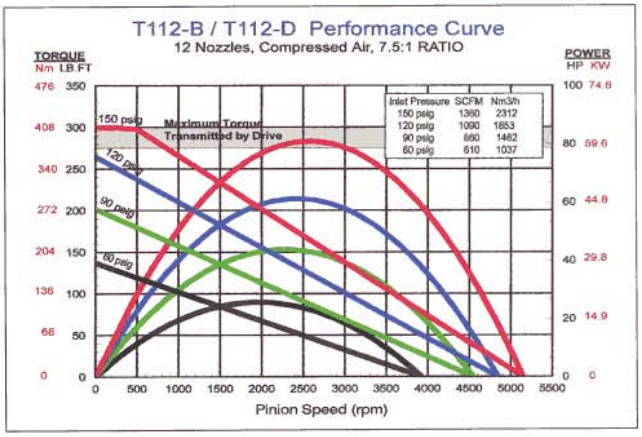
Consult your TDI Distributor and the TDI Selection Guide before choosing a TDI TurboTwin starter for any application.

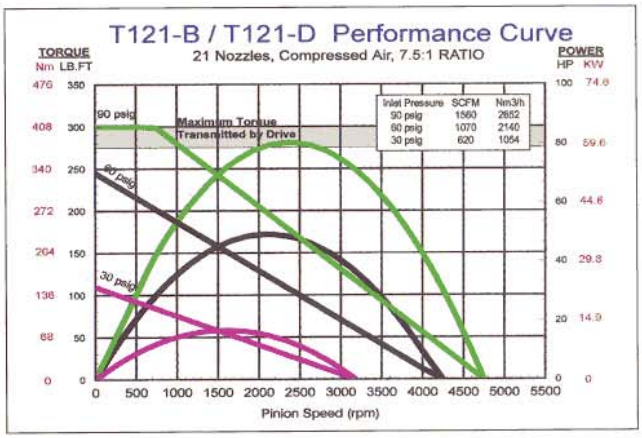
This selection chart shows basic starter capability by engine size. Note the chart shows four-stroke diesel engine size on the left and four-stroke, spark-ignited engine sizes on the right. Always consult TDI for application-specific capability.

DIMENSIONAL DATA

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







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

SPECIFICATIONS

Engines: Starts Engines up to 250 Liters (15,000 CID)

Design Configuration: Inline; Inertia-Engaged

Common Pinion Configuration: 6/8 Pitch, 12 Tooth (2 inch pitch diameter pinion)

Mounting: SAE D-Style Flange

Horsepower:
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.

Rotation: (Facing Pinion Orientation) Righthand/clockwise and Lefthand/counter clockwise

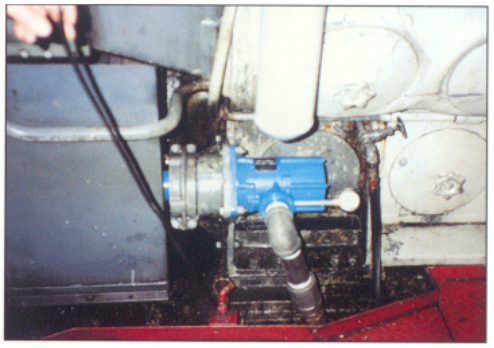
Air/Gas Supply: Compressed Air or Natural Gas

Lubrication: Grease-Packed For Life, None Required

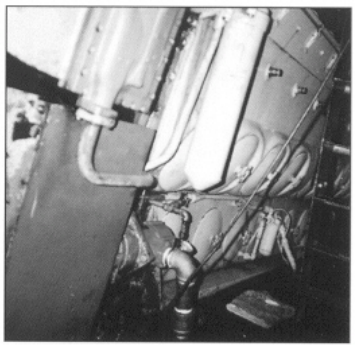
Gear Ratio: 7.5:1

Custom: Other models and configurations available. Consult your local TDI distributor.

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

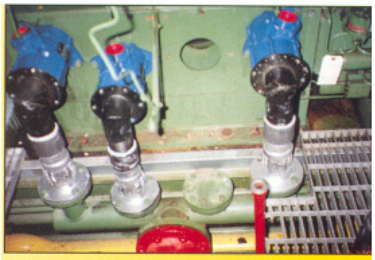


Two views of a T100-D *on an EMD 16-567 diesel engine*



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.

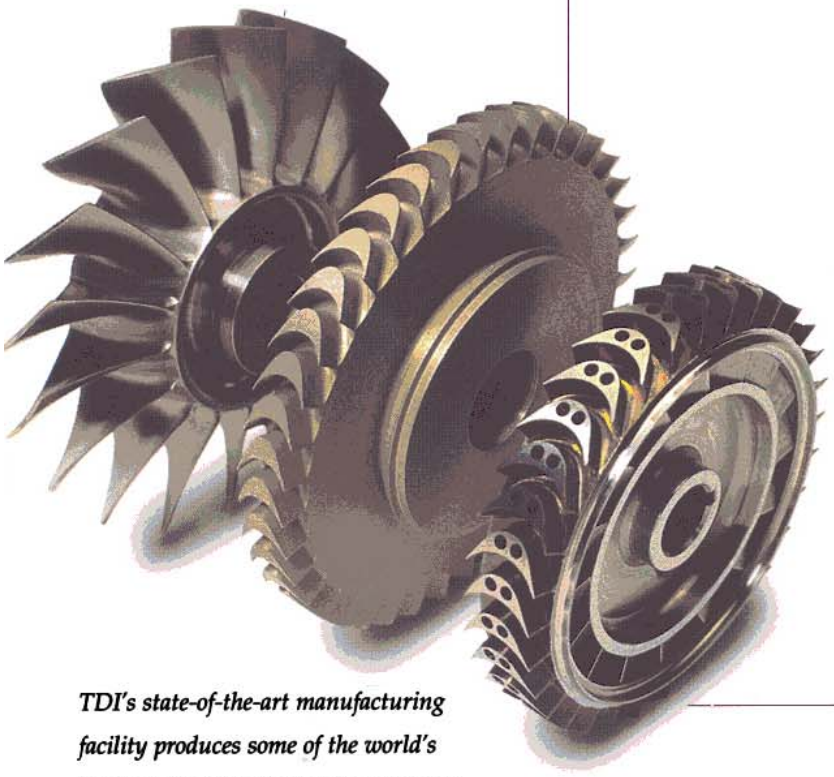
Specifications:

T100-F

TURBOTWIN™ Engine Air Starters

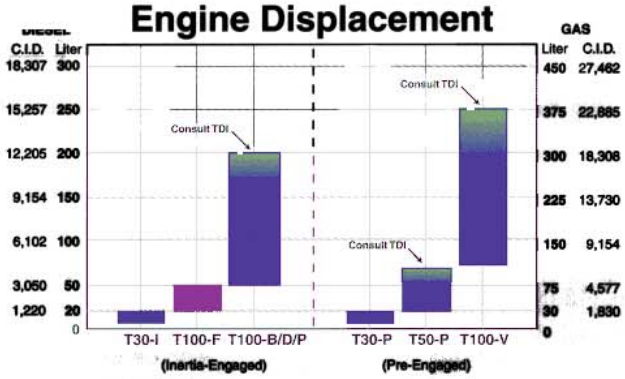
An Economical Configuration of

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

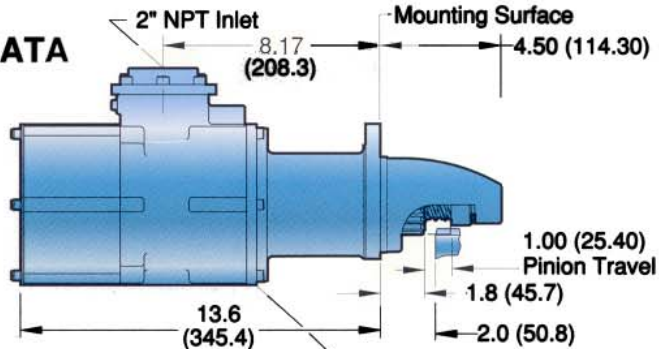


Consult your TDI Distributor and the TDI Selection Guide before choosing a TDI TurboTwin starter for any application.

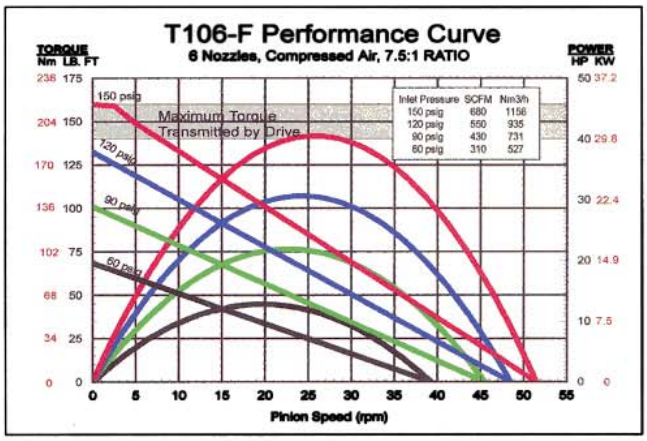
This selection chart shows basic starter capability by engine size. Note the chart shows four-stroke diesel engine size on the left and four-stroke, spark-ignited engine sizes on the right. Always consult TDI for application-specific capability.

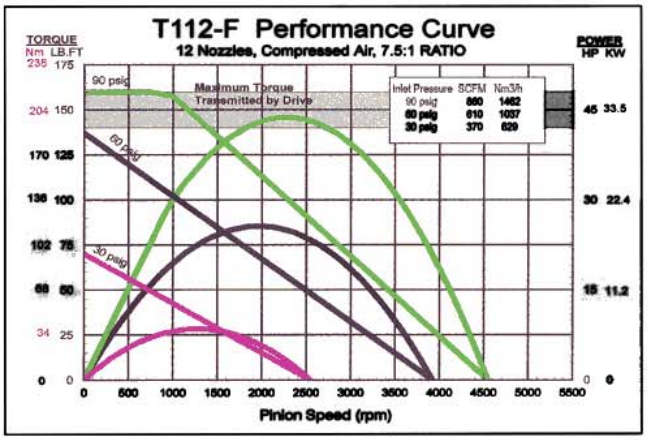
DIMENSIONAL DATA

TDI *TURBOTWIN*
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)

Design Configuration: Inline; Inertia-Engaged

Common Pinion Configuration: 6/8 Pitch, 12 Tooth (2 inch pitch diameter pinion)

Mounting: SAE 3 Flange, Standard

Horsepower:
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.

Rotation: (Facing Pinion Orientation) Righthand/clockwise and Lefthand/counter clockwise

Air/Gas Supply: Compressed Air or Natural Gas

Lubrication: Grease-Packed For Life, None Required

Gear Ratio: 7.5:1

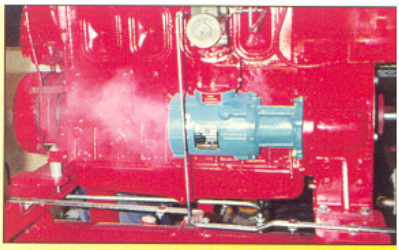
Custom: Other models and configurations available. Consult your local TDI distributor.

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

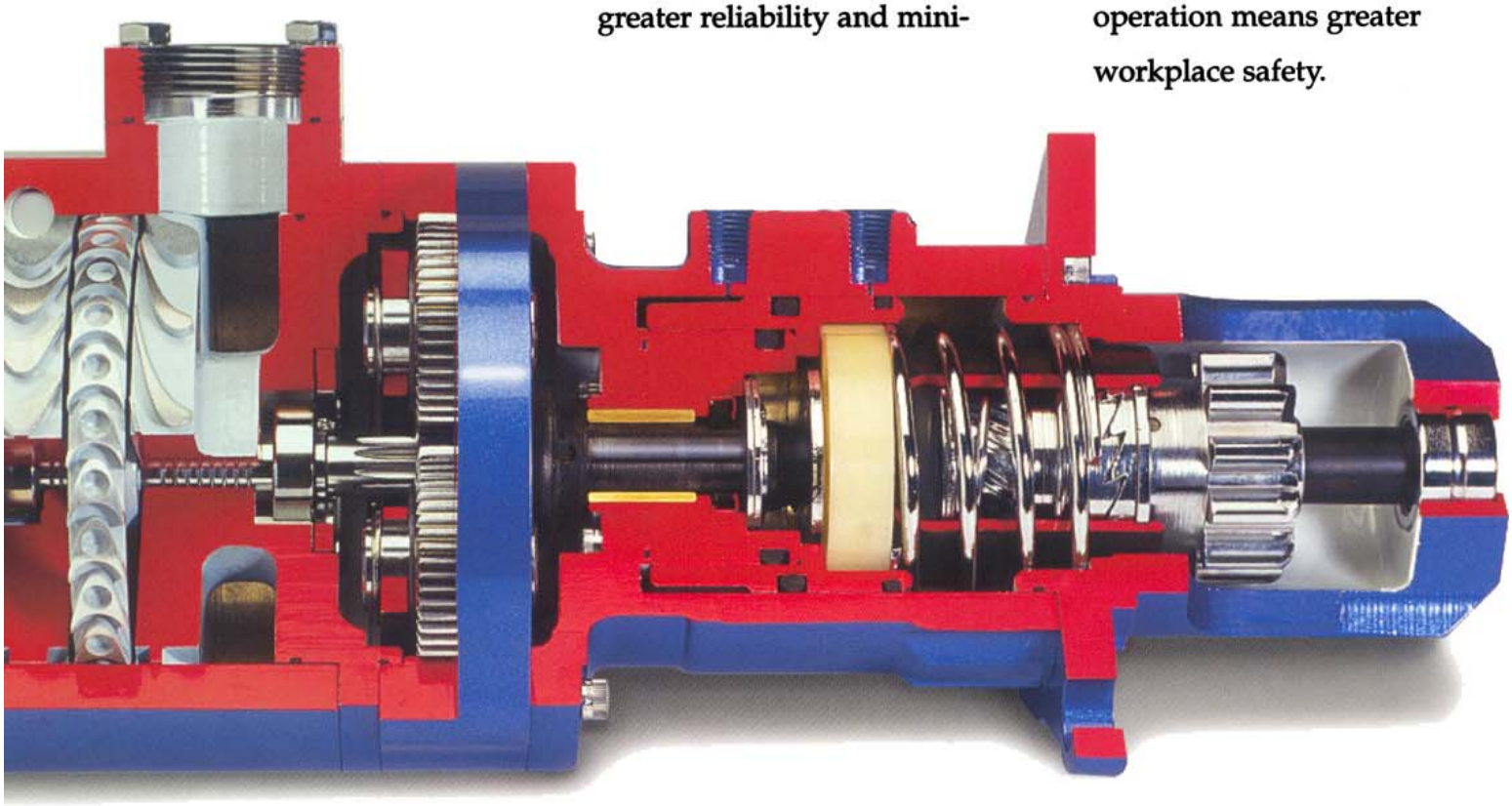
T50 uses only high-quality, high-strength steel and aluminum alloys machined to the industry's tightest tolerances. There's no cutting corners, and definitely no plastic parts as used in other turbine air starters.

Fewer Moving Parts Means Fewer Repairs

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

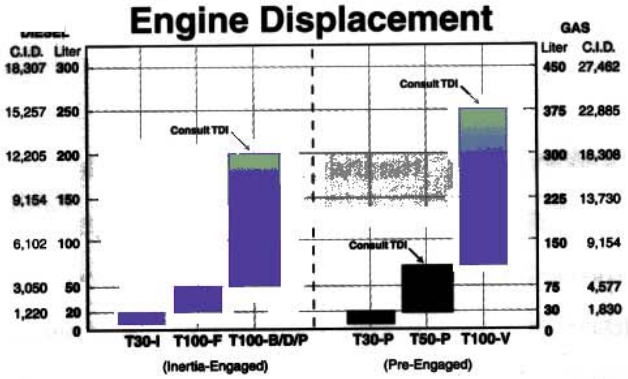
Lightweight, low-inertia, rotating elements provide "soft engagement"... extending the life of both ring and pinion gears

Specifications:

T50-P

TURBOTWIN™ Engine Air Starters

Starter Selection Chart
Engine Displacement

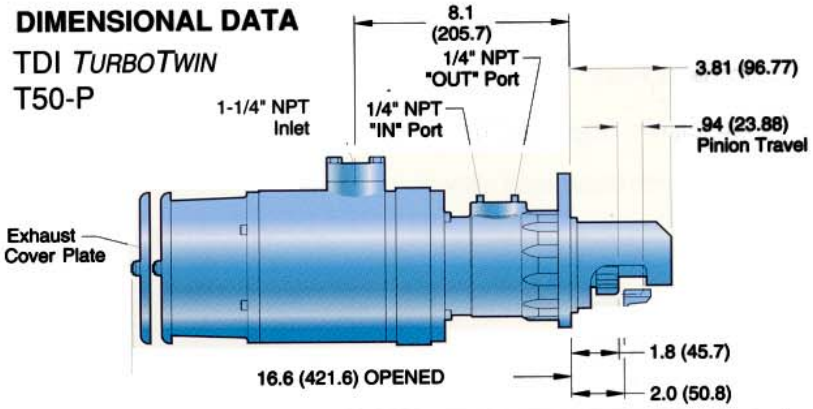


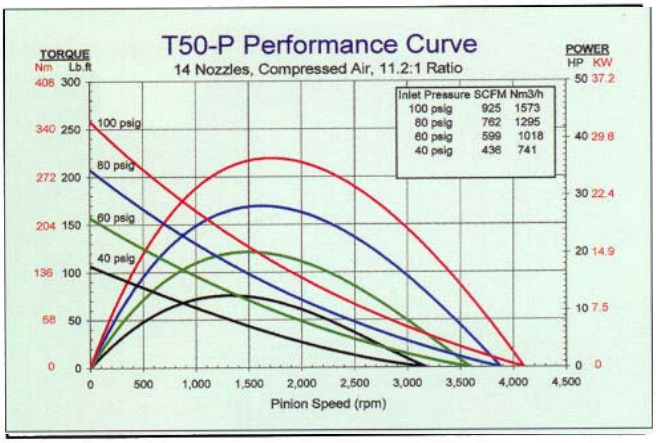
Consult your TDI Distributor and the TDI Selection Guide before choosing a TDI TURBOTWIN starter for any application.

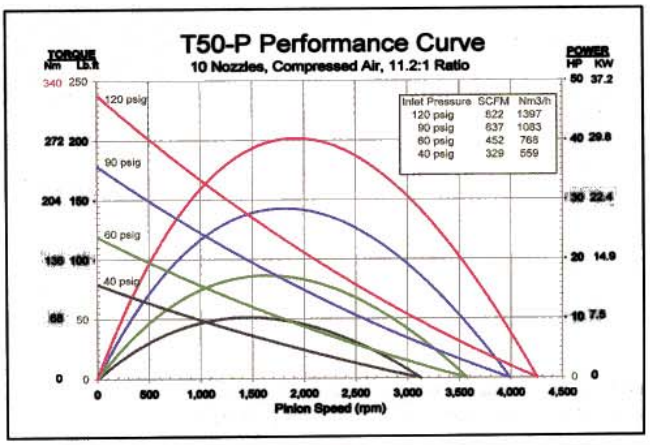
This selection chart shows basic starter capability by engine size. Note the chart shows four-stroke diesel engine size on the left and four-stroke, spark-ignited engine sizes on the right. Always consult TDI for application-specific capability.

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)

Design Configuration: Inline; Pre-Engaged

Common Pinion Configuration: 6/8 Pitch, 11 Tooth

Mounting: SAE 3

Horsepower:
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.

Rotation: (Facing Pinion Orientation) Righthand/clockwise and Lefthand/counter clockwise

Air Supply: Air Only

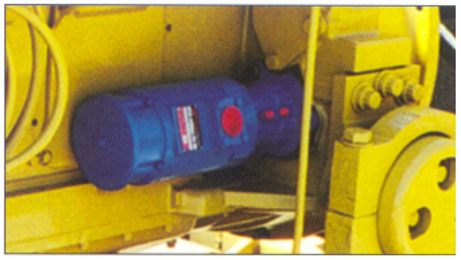
Lubrication: Grease-Packed For Life, None Required

Gear Ratio: 11.2:1

Custom: Other models and configurations available.
Consult your local TDI distributor.

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

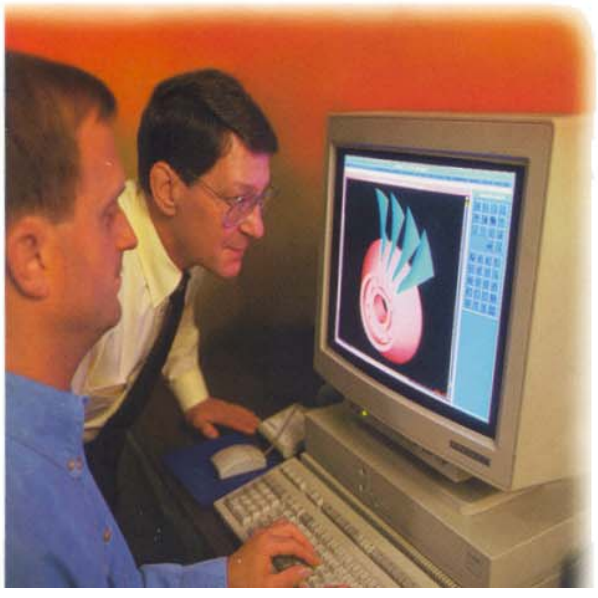
The T50-P *provides reliable startin in any weather.*

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.

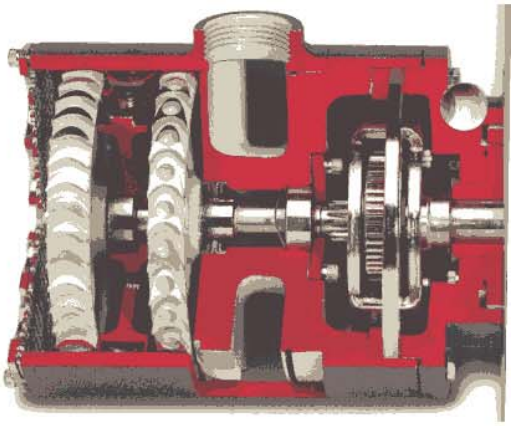
Lightweight

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.

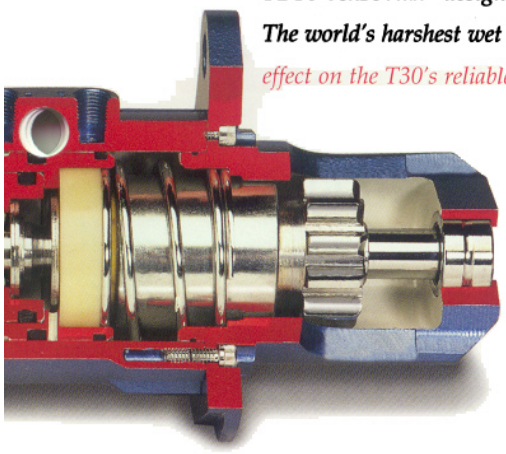
No Mess, No Fugitive Emissions

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.

Weighs 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.

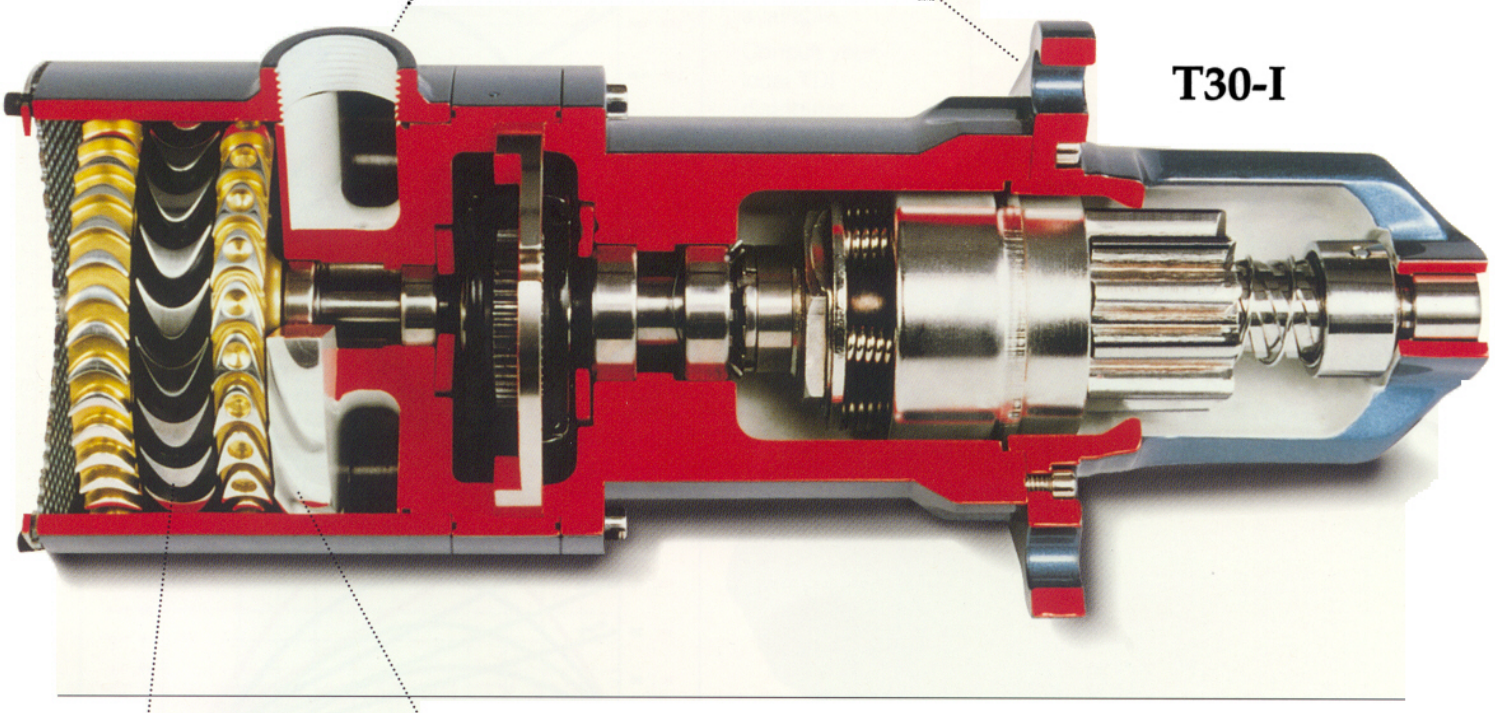
Inertia or Pre-Engaged — T30 Fits

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™*.



T30-I

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.

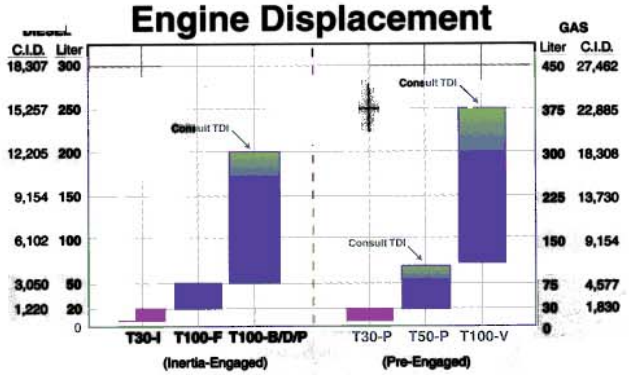
No oil sumps to check and fill.

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

Specifications:

T30-I
T30-P
TURBOTWIN™ Engine Air Starters

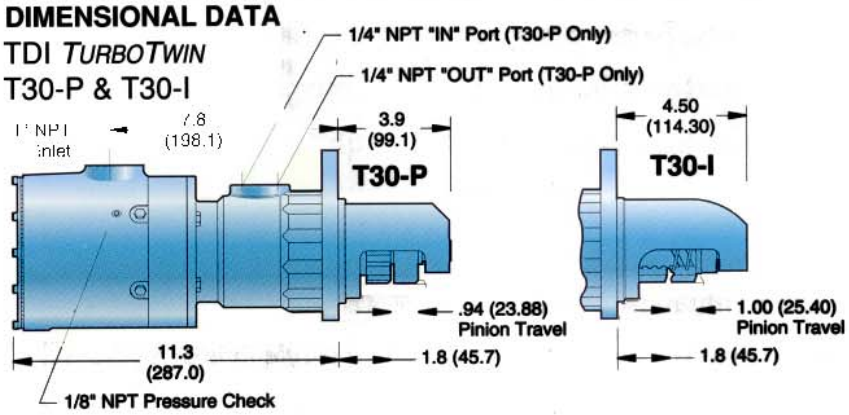
Starter Selection Chart
Engine Displacement

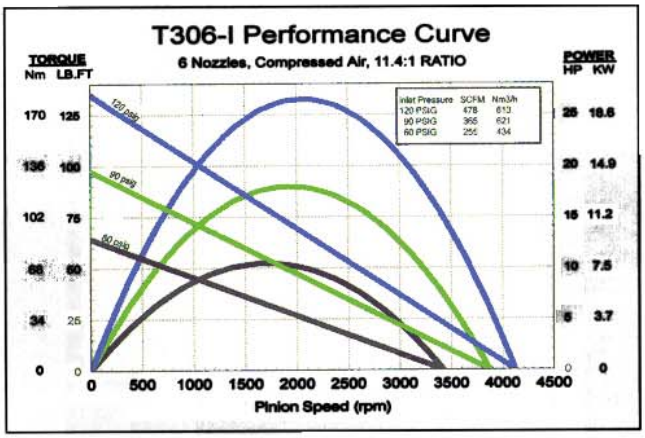


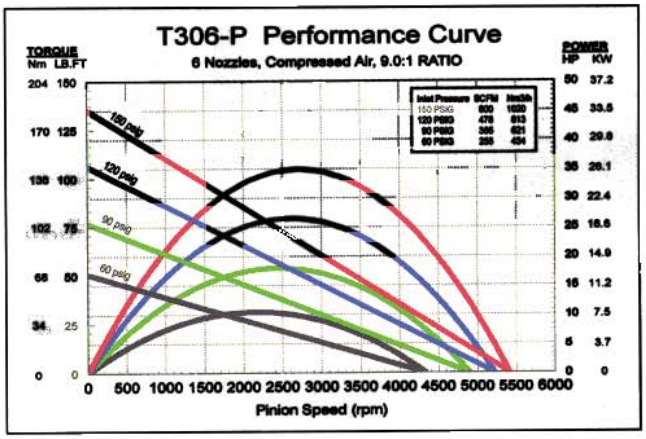
Consult your TDI Distributor and the TDI Selection Guide before choosing a TDI TURBOTWIN starter for any application.

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*
T30-P & T30-I







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)
Design Configuration:	
T30-I	Inertia-Engaged
T30-P	Pre-Engaged
Common Pinion Configurations:	6/8 Standard, 11 Tooth
	8/10 Pitch, 12 Tooth
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.
	29 lbs. (13.2 kg)
Operating Pressure Range:	

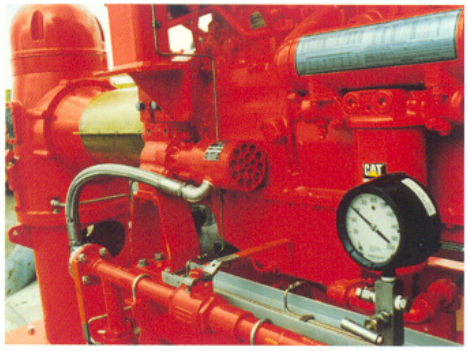
Rotation:	(Facing Pinion Orientation) Righthand/clockwise and Lefthand/counter clockwise
Air/Gas Supply:	Compressed Air or Natural Gas
Lubrication:	Grease-Packed For Life, None Required
Gear Ratio:	
T30-I	11:1
T30-P	9:1
Custom:	Other models and configurations available. Consult your local TDI distributor.

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.

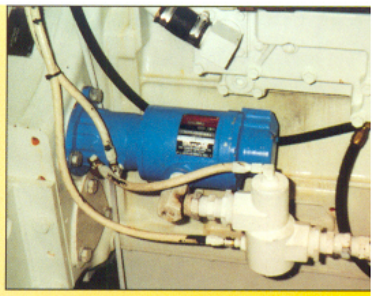
FOR ENGINE COMPATIBILITY AND STARTER REPLACEMENT INFORMATION, SEE TABLE ON PAGE 23 OR CONSULT YOUR TDI DISTRIBUTOR.

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

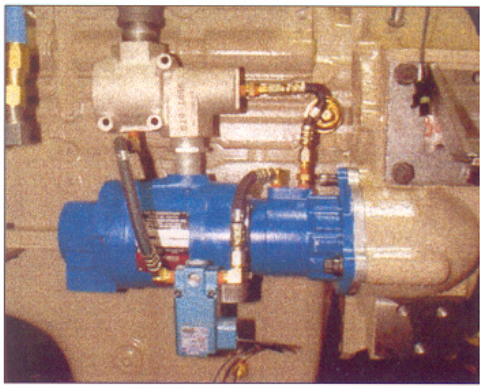


T306-I mounted on Caterpillar 3406 Engine *for fire pump application*

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



Model T306-P *on Luggar Marine Diesel Engine*



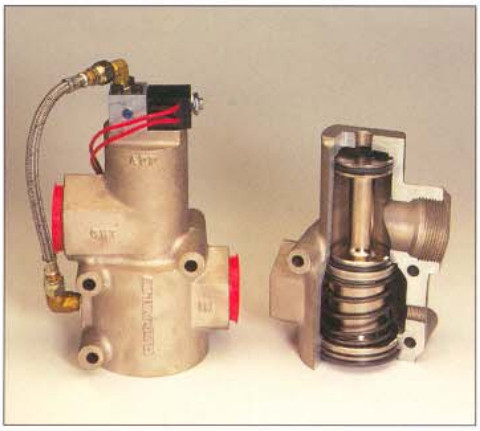
T306-P factory-installed *on a Cummins N14 engine*

TURBOTWIN™ Valves and Accessories

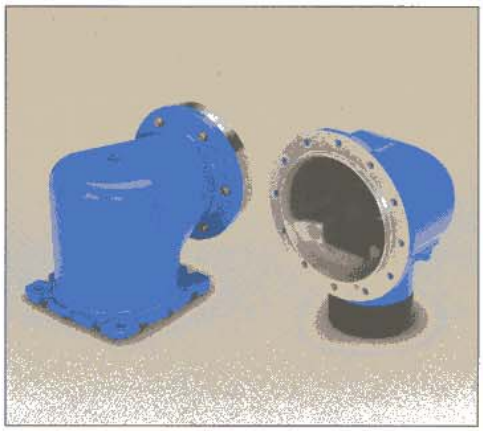
TDI offers a wide variety of valves, fittings and accessories to help maximize the efficiency of your TurboTwin Starters. Featured here are some of the more popular items. For specific order numbers or additional accessory needs, contact your local distributor or visit our website at www.tdiairstarters.com.

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
6 - 20	**CATERPILLAR** D3304 G3306 G333C	**T306-I** Inertia engaged, std. pressure RH or LH rotation
	CLIMAX HB4 R81 R41 R61 R110 R165	**T312-I** Inertia engaged, low pressure RH or LH rotation
	WAUKESHA 145GK 6WAK 6GAK 6EL F817G WOK 145GZ 6EK 6WAL 1077G	**T306-P** Pre-engaged, std. pressure RH or LH rotation
	CATERPILLAR G343 G342 G3406 G353 G3408	**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
	COOPER AJAX DP60 DPC60	**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
	WAUKESHA VRG 220	**T303-Y** Pre-engaged, std. pressure RH or LH rotation
	WAUKESHA 130GS 6MS VRG232 6BZ 6BL 195GK 130GL VRG330 6BM 6ML 190GL 6MK VRG265 6MZ VRG283 6SR 195GL HS VRG310 **WHITE ENGINES** 1XB QXC 1XLBG G2300 G1500 QXC G1600 G3000 GO169H JXLD G2000 G339 QXB YRH JX4D	**T303-Y** Pre-engaged, std. pressure RH or LH rotation

LITERS	ENGINE MAKE/MODEL	TDI MODEL NUMBER
20 - 70	**CATERPILLAR** G3412 **COOPER AJAX** DPC-80 DP-125 DPC-105 DP-165 DPC-115 DPC-180 DPC-140 **WAUKESHA** NKR P2154G F1905G L36 6LS 6LK 6NK H2475G	**T106-F** Inertia engaged, std. pressure RH or LH rotation **T112-F** Inertia engaged, low pressure RH or LH rotation
Above 70	**CATERPILLAR** G379 G398 3500 Series G399 **COOPER BESSEMER** GMSC GMX Series **COOPER SUPERIOR** 6GX-510 6G-510 6GT-510 **WAUKESHA** F2895G G7042 P48G 8L-AT27G L5788 12VAT25G 5790G 12VAT27G L7040G 16VAT27G (2)	**T112-B** Inertia engaged, std. pressure RH or LH rotation **T121-B** Inertia engaged, low pressure RH or LH rotation **T112-V** Pre-engaged, std. pressure RH or LH rotation **T121-V** Pre-engaged, low pressure RH or LH rotation
	CATERPILLAR G3606 G3612 (2) G3608 G3616 (2) **COOPER SUPERIOR** 1700 Series 825 Series 2400 Series **WAUKESHA** P9390G	**T112-V** Pre-engaged, std. pressure RH or LH rotation **T121-V** Pre-engaged, low pressure RH or LH rotation
	COOPER AJAX DPC-280 DPC-360 DPC-230 DPC-600 DPC-250 DPC-800 DPC-325	**T112-B** Inertia engaged, std. pressure RH or LH rotation **T121-B** Inertia engaged, low pressure RH or LH rotation **T112-V** Pre-engaged, std. pressure RH or LH rotation **T121-V** Pre-engaged, low pressure RH or LH rotation

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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