

TDI *TURBOTWIN*[™]

AIR STARTERS FOR

OIL & GAS APPLICATIONS



Built for Long Cranking Cycles and Long-Term Reliability

TDI
TECH DEVELOPMENT

www.tdi-turbotwin.com

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For Oil and Gas Engines, Anything Less Than a **TURBOTWIN™** Starter is a Compromise.

Nothing lasts as long as a TurboTwin.

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.

TurboTwin blade designs optimize air throughput for greater starting power.



TurboTwin handles the dirtiest, messiest environments.

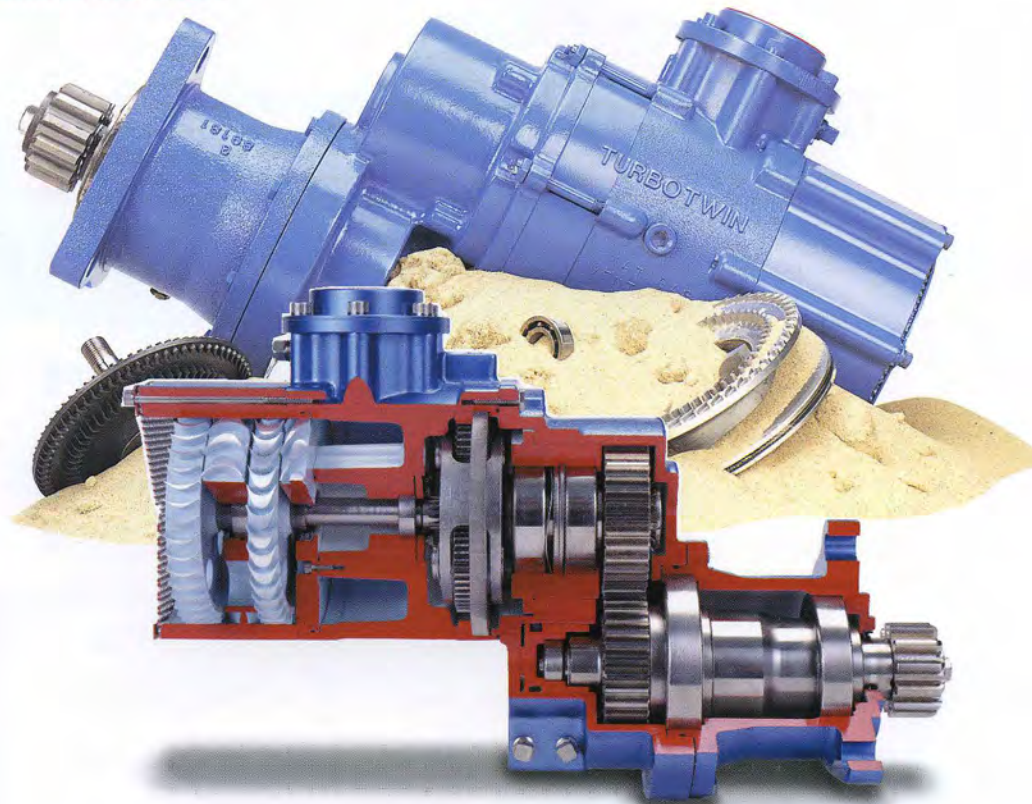
Crank It Long And Hard

TurboTwin's aerodynamic speed control invites you to "give it all you've got." Don't worry about gear box burnout. It handles your longest and hardest cranking cycles without problems.



No Plastic Parts

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



No Lubrication Means No Long-Distance Maintenance

TurboTwins are grease-packed for life. No lubrication to add and no need to schedule maintenance visits to remote locations.

Dirt, Sand, Water, Or Salty Air Won't Contaminate TurboTwin

TurboTwin was designed specifically for ultimate reliability in the harsh environments of the oil and gas industry. No rubbing parts to stick or swell, and a unique open air path design with extremely large openings

passes contaminants that lodge in lesser starter models.

Can Your Remote Sites Afford Less Than TurboTwin Reliability?

The lost time and money for attending to a faulty starter are enormous. With so much riding on each start, doesn't it make sense to rely on the starter that lasts longer, requires less maintenance and is designed specifically for the long, extended cranking cycles of the oil and gas industry?

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



*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.

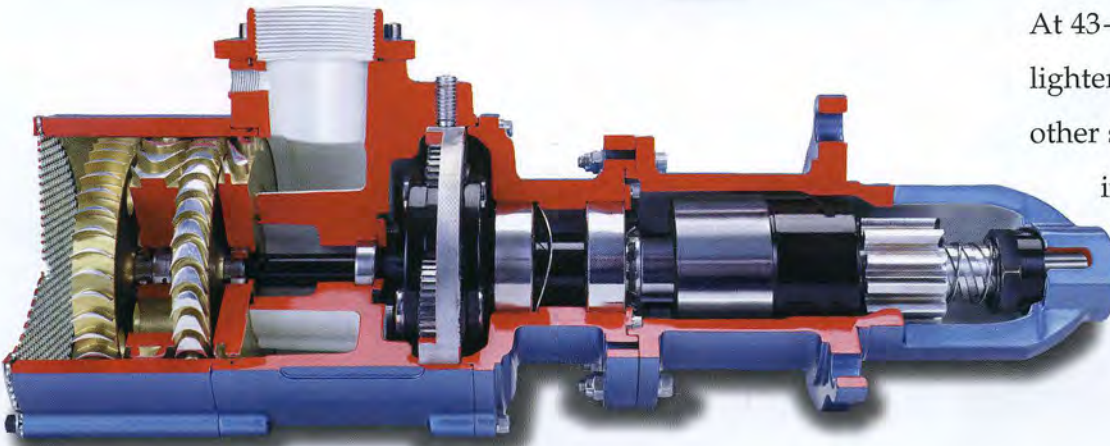


T100-V (Pre-Engaged)

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.



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

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

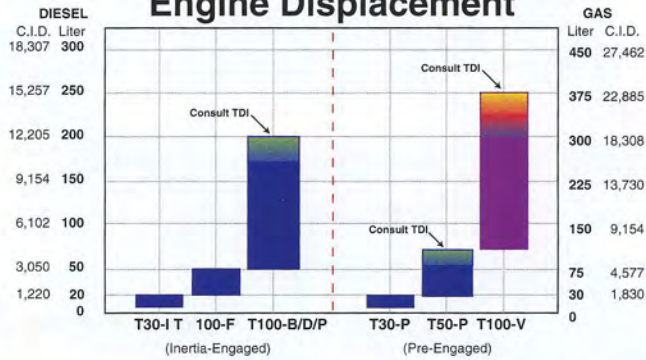
TURBOTWIN™

Engine Air Starters

For Pre-Engaged and Small-Space Mounting Environments



Starter Selection Chart Engine Displacement

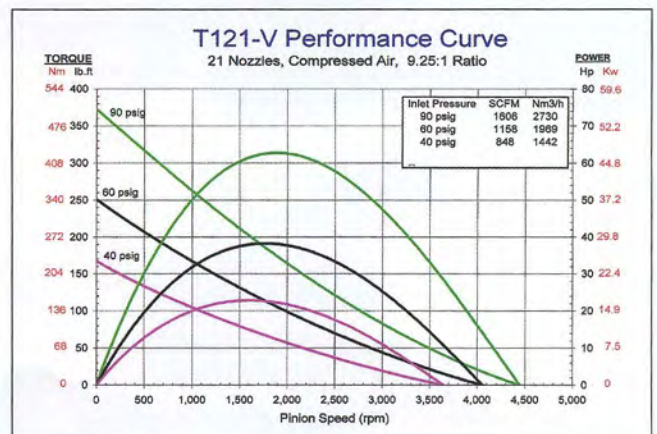
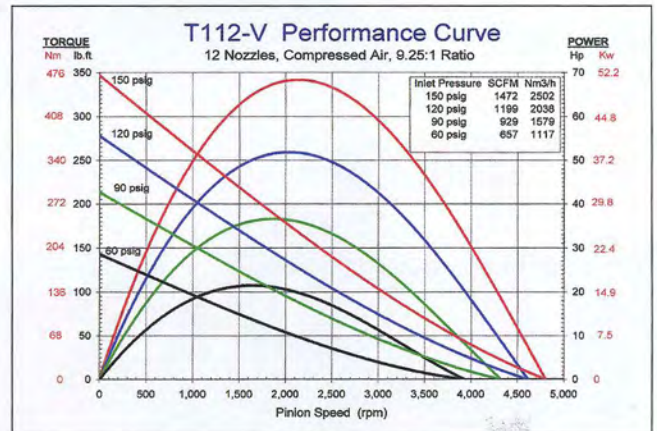
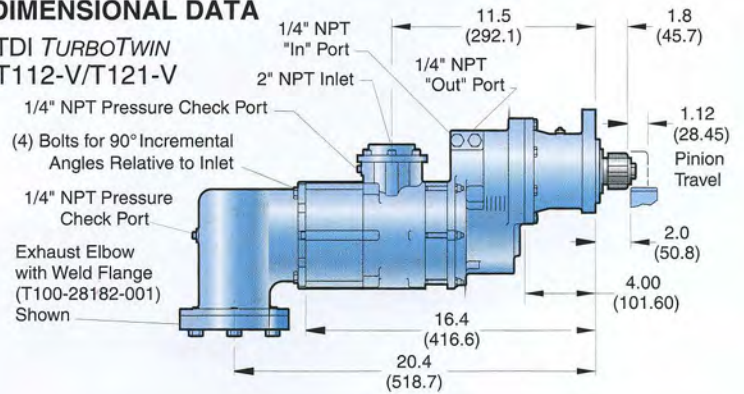


Consult your TDI Distributor and the TDI Selection Guide before choosing a TDI TURBOTWIN starter for any application.

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

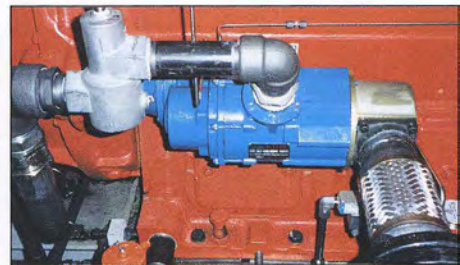


The power of T100 is now pre-engaged.

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

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:			



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.)

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.



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

Specifications:

T100-B and T100-P

TURBOTWIN™

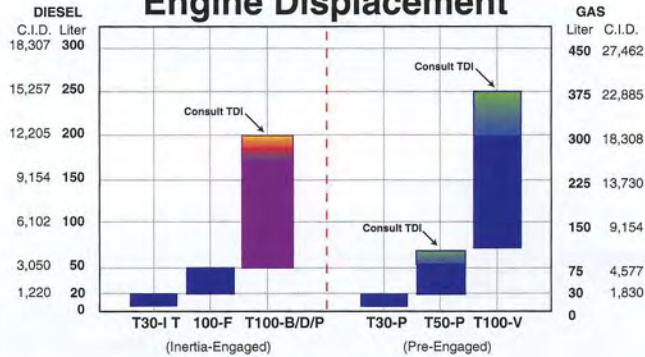
Engine Air Starters

The Most Popular T100 Configurations



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

Starter Selection Chart Engine Displacement

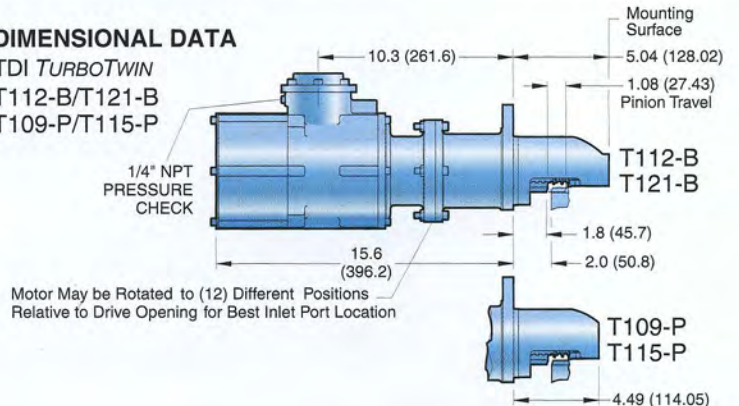


Consult your TDI Distributor and the TDI Selection Guide before choosing a TDI TURBOTWIN starter for any application.

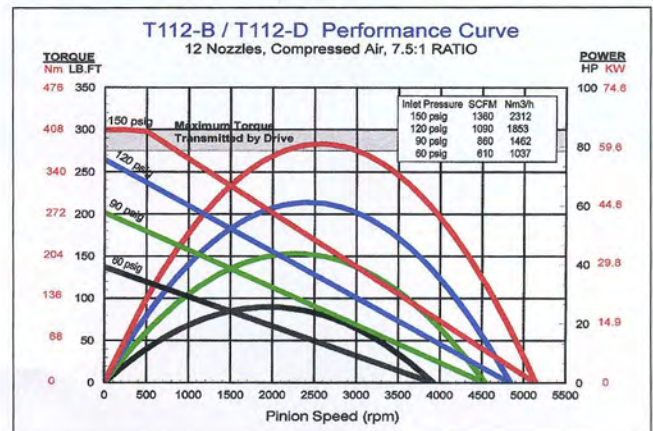
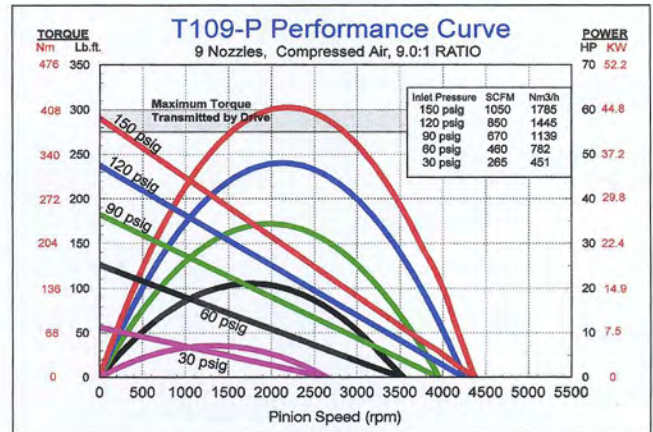
This selection chart shows basic starter capability by engine size. Note the chart shows four-stroke diesel engine size on the left and four-stroke, spark-ignited engine sizes on the right. Always consult TDI for application-specific capability.

DIMENSIONAL DATA

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



Motor May be Rotated to (12) Different Positions Relative to Drive Opening for Best Inlet Port Location



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
T109-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.

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

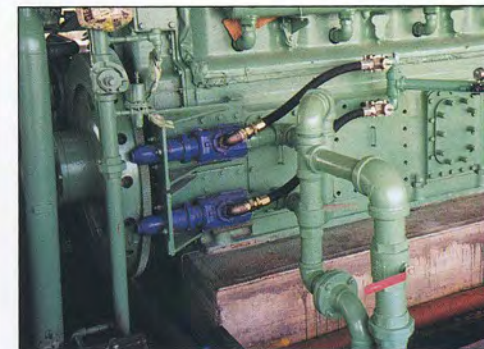
Power and Reliability for Engines up to 300 Liters and Larger.



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 650 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.

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

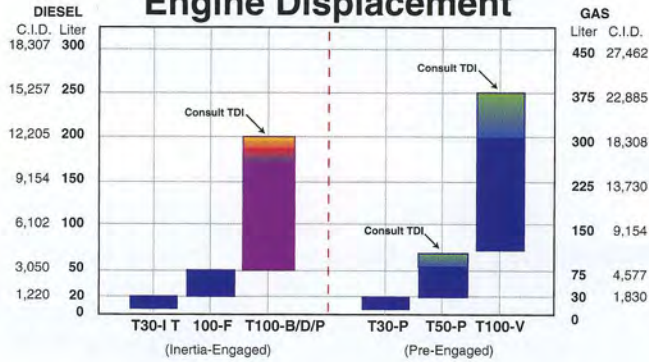
Specifications:

T100-D

TURBOTWIN™

Engine Air Starters

Starter Selection Chart Engine Displacement

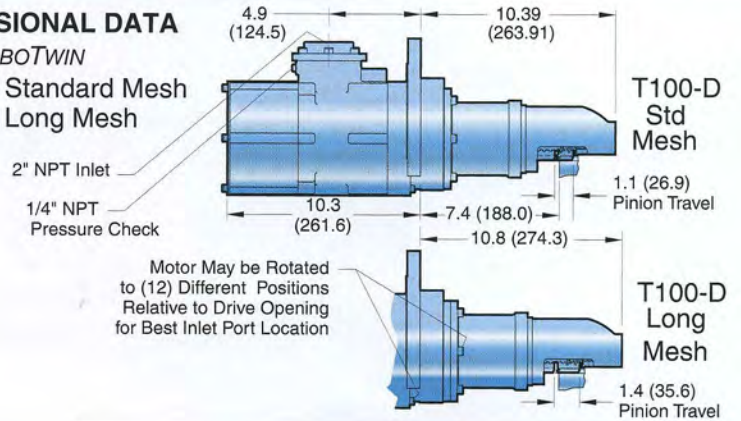


This selection chart shows basic starter capability by engine size. Note the chart shows four-stroke diesel engine size on the left and four-stroke, spark-ignited engine sizes on the right. Always consult TDI for application-specific capability.

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

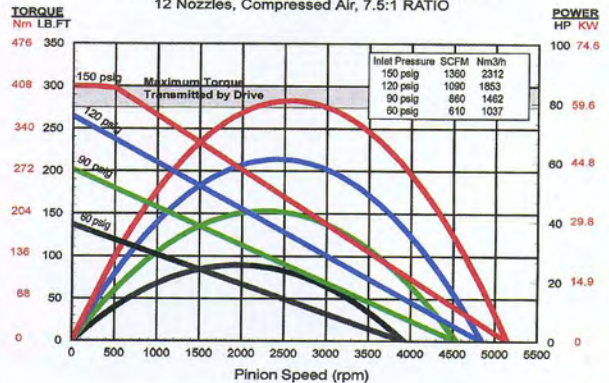
DIMENSIONAL DATA

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



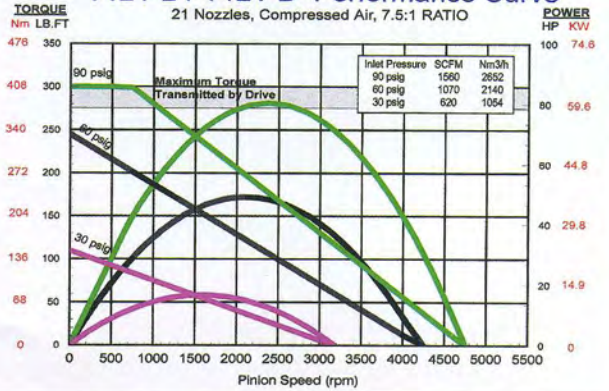
T112-B / T112-D Performance Curve

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.

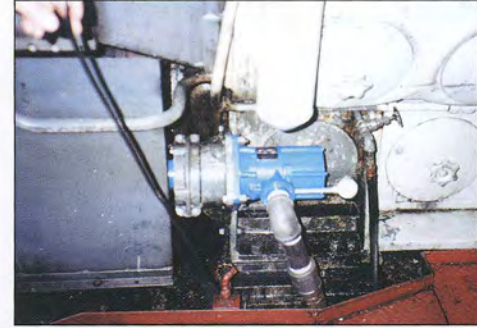
SPECIFICATIONS

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		
Common Pinion Configuration:	6/8 Pitch, 12 Tooth (2 inch pitch diameter pinion)	Air/Gas Supply:	Compressed Air or Natural Gas
Mounting:	SAE D-Style Flange	Lubrication:	Grease-Packed For Life, None Required
Horsepower:		Gear Ratio:	7.5:1
T112-D:	80 hp (60 kW) Max. at 150 psig (10.3 BAR)	Custom:	Other models and configurations available.
T121-D:	80 hp (60 kW) Max. at 90 psig (6.2 BAR)		
Weight:	70 lbs. (32 kg)		Consult your local TDI distributor.
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:

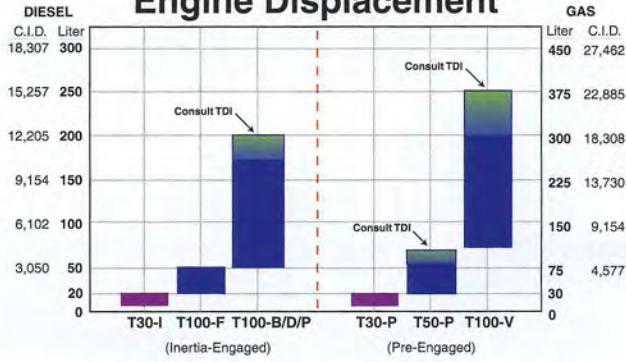
T100-F TURBOTWIN™ Engine Air Starters

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.

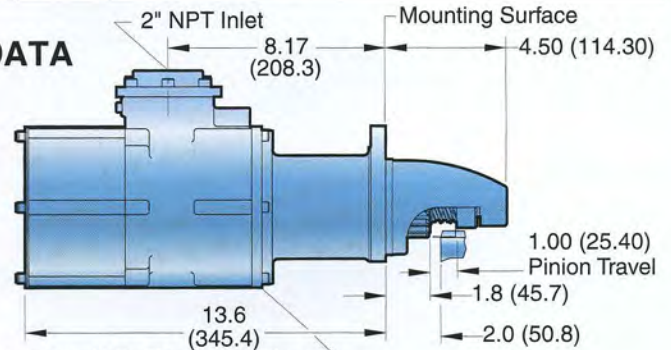
Starter Selection Chart Engine Displacement



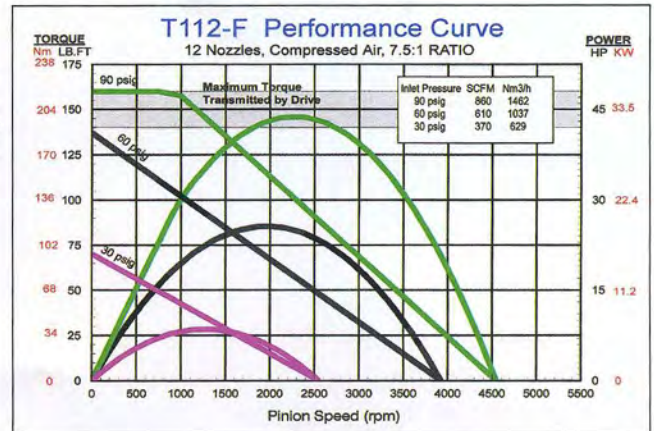
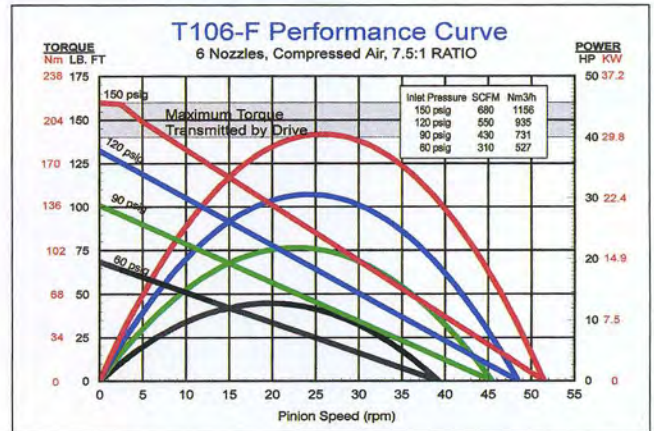
Consult your TDI Distributor and the TDI Selection Guide before choosing a TDI TURBOTWIN starter for any application.

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)	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

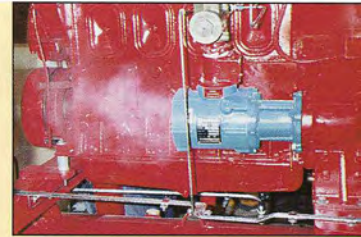
For applications in the 60-90 psig (4.1-6.2 BAR) range, consult your TDI distributor for best nozzle configuration.

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 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.

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



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.

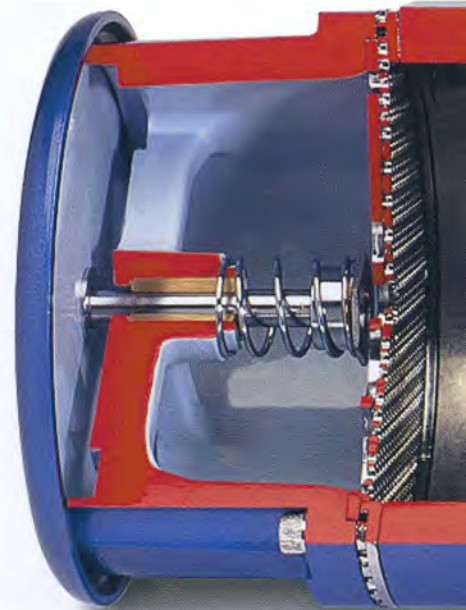
The T-50 Turbine Air Starter delivers 40 hp of cranking power for starting medium-size gas and diesel engines. At only 34 lbs. (15.4 kg) and 5.76 in. (146 mm) in diameter, its size-to-power ratio sets the industry standard. Refinements to the TurboTwin design have reduced noise levels below standards 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 light-weight, compact package.

The World's Most Contaminated Air Has No Effect 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 is flushed 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.

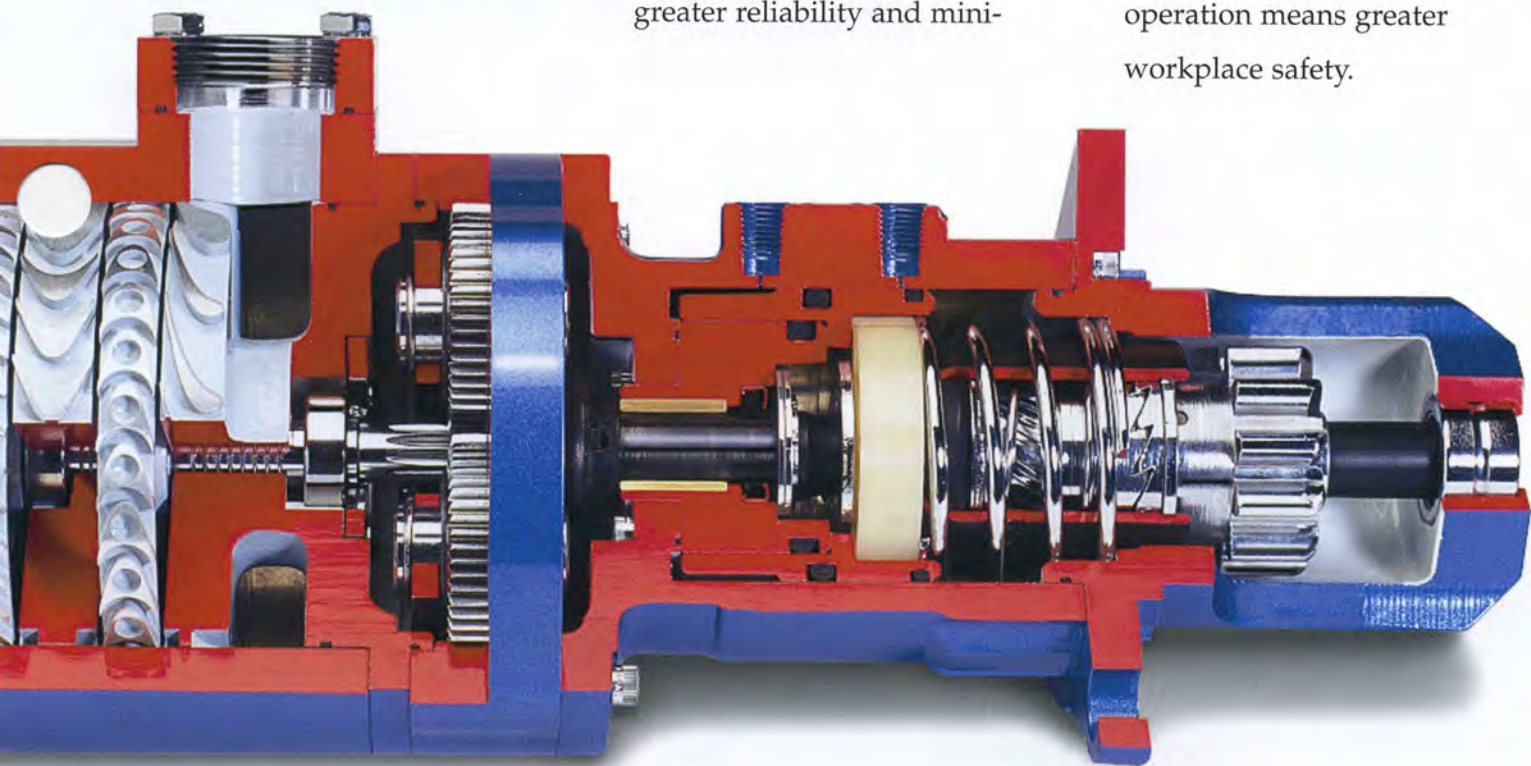
Fewer Moving Parts Means Fewer Repairs

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

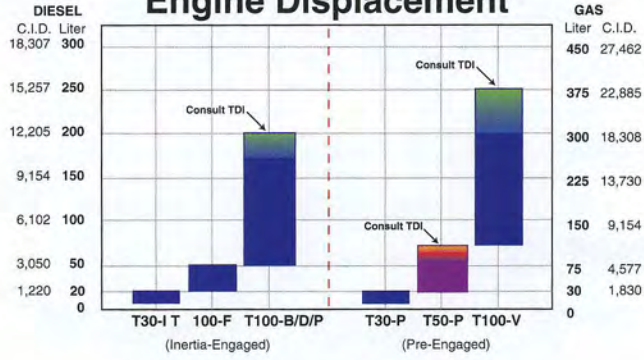
Specifications:

T50-P and T50-Y

TURBOTWIN™ Engine Air Starters



Starter Selection Chart Engine Displacement

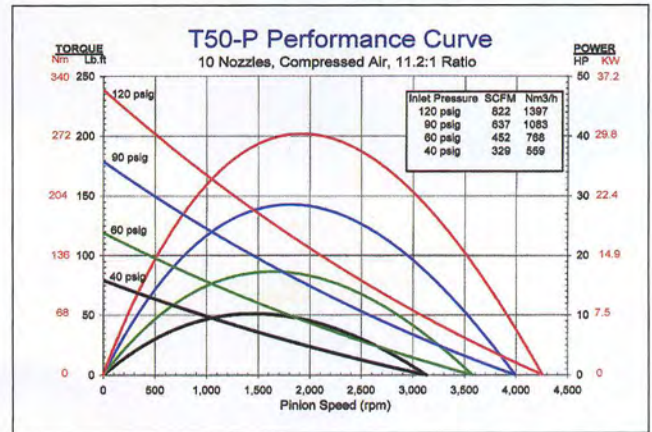
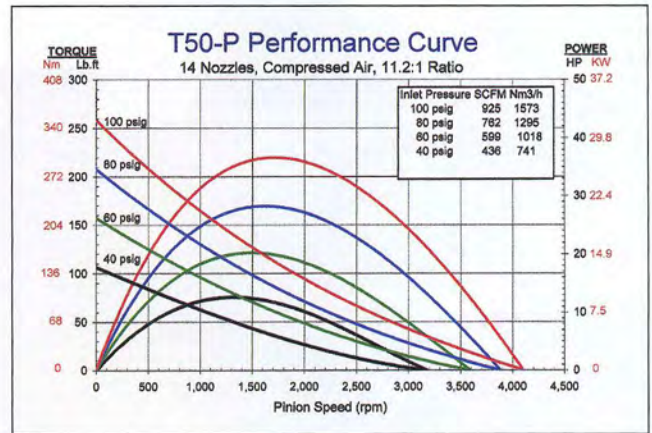
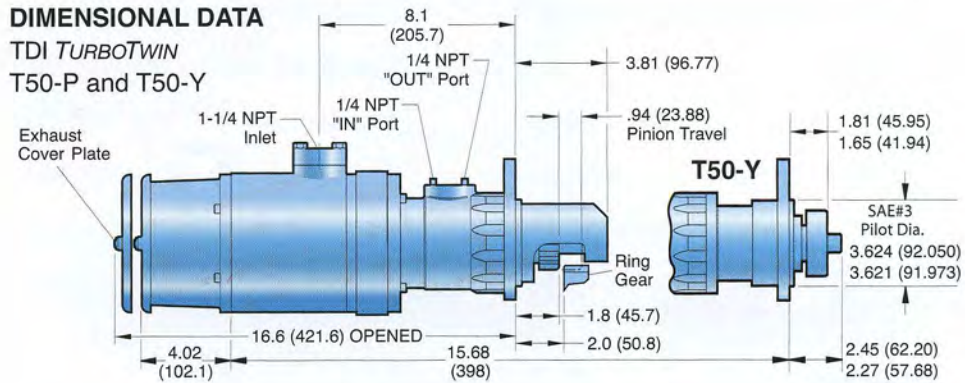


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DIMENSIONAL DATA

TDI TURBOTWIN
T50-P and T50-Y



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

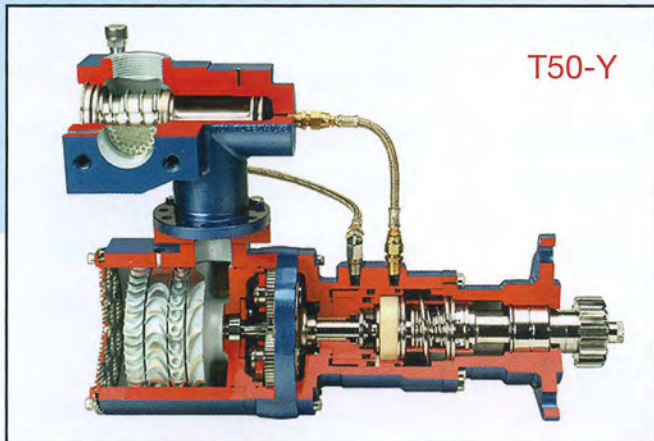
SPECIFICATIONS

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/Y	8	45 - 150	3.1 - 10.3
T510-P/Y	10	45 - 120	3.1 - 8.3
T514-P/Y	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, T30-P, and T30-Y

**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. The versatile T30 is available with inertia-engagement, pre-engagement, and now with a pre-engaged over-hung pinion for European engines.

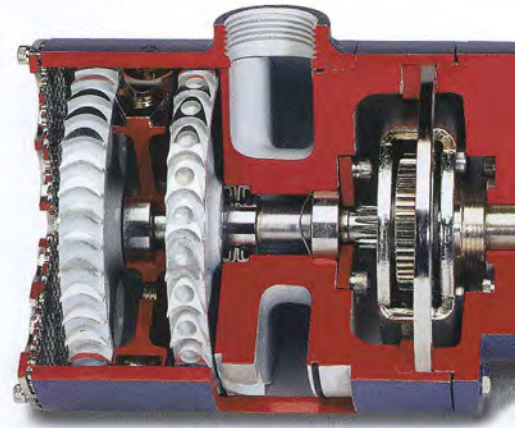
Lightweight.

At 29 lbs. (13.2 kg), 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.

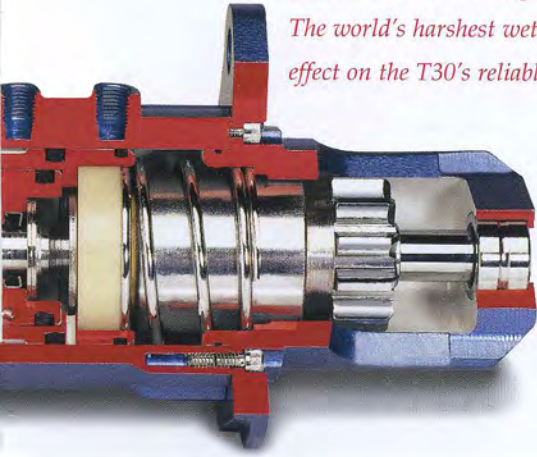
No Mess. No Fugitive Emissions.

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?

Half the Moving Parts and No Plastic Moving Parts.

Quality has been designed into the T30. We've minimized the moving parts (less than half the number on competitive models). Plastic rotating parts wear out quicker. We refuse to compromise by cutting corners on material, which is why all

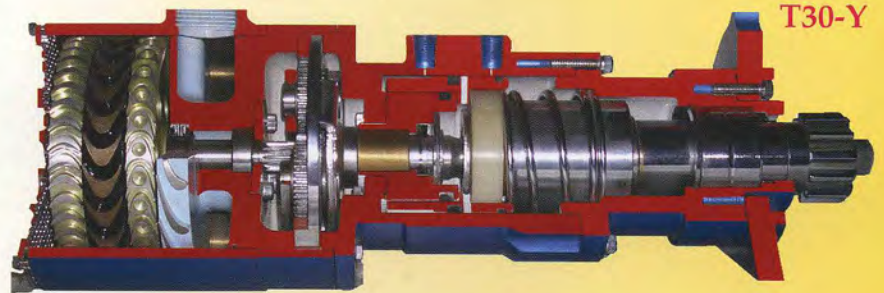
TDI's TURBOTWIN™ design flourishes in contaminated air. The world's harshest wet and dry environments have no effect on the T30's reliable cranking power.



T30-Y Pre-Engaged Overhung Pinion

The versatile, pre-engaged overhung drive design was designed primarily for European engines (and the Cummins 5.9L Engine). T30-Y features metric and U.S. Standard pinions and a wide variety of mounting options.

of our rotating parts are made of high-strength steel and aluminum alloys that deliver significantly longer life than other similar-size starting systems.



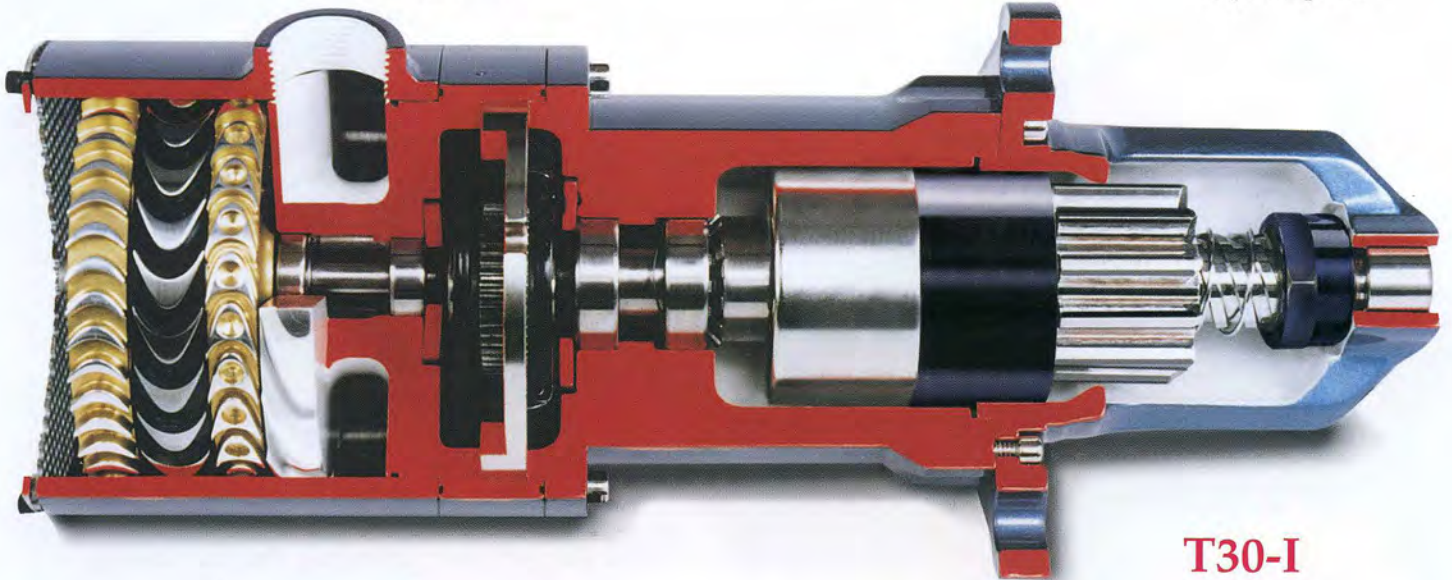
T30-Y

Low-consumption one-inch NPT inlet.

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

Rotatable mounting flange provides installation flexibility.

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



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:

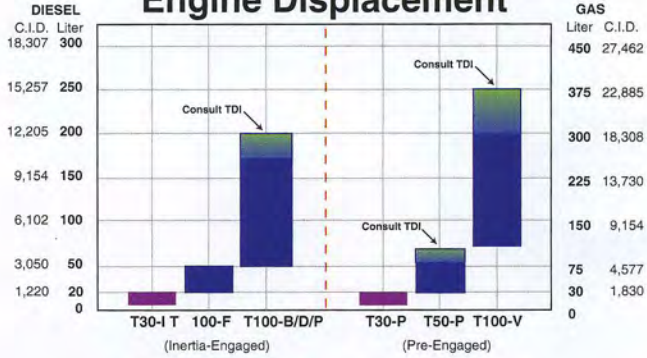
T30-I, T30-P, and T30-Y

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

1/4 NPT "IN" Port (T30-P Only)

1/4 NPT "OUT" Port (T30-P Only)

1" NPT Inlet

7.8 (198.1)

3.9 (99.1)

Ring Gear

1.8 (45.7)

.94 (23.88) Pinion Travel

11.3 (287.0)

1/8 NPT Pressure Check

14.3 (363.22)

2.0 (50.8) (To ring gear face)

2.4 (61)

4.5 (114.3)

Ring Gear

1.00 (25.40) Pinion Travel

1.8 (45.7)

2.0 (50.8)

SAE#3 Pilot Dia.

3.624 (92.050)

3.621 (91.973)

2.4 (61)

11.3 (287.0)

1.8 (45.7)

2.0 (50.8)

1.8 (45.7)

1.00 (25.40)

1.8 (45.7)

4.5 (114.3)

3.624 (92.050)

3.621 (91.973)

2.4 (61)

11.3 (287.0)

1.8 (45.7)

2.0 (50.8)

1.8 (45.7)

1.00 (25.40)

4.5 (114.3)

3.624 (92.050)

3.621 (91.973)

2.4 (61)

11.3 (287.0)

1.8 (45.7)

2.0 (50.8)

1.8 (45.7)

1.00 (25.40)

4.5 (114.3)

3.624 (92.050)

3.621 (91.973)

2.4 (61)

11.3 (287.0)

1.8 (45.7)

2.0 (50.8)

1.8 (45.7)

1.00 (25.40)

4.5 (114.3)

3.624 (92.050)

3.621 (91.973)

2.4 (61)

11.3 (287.0)

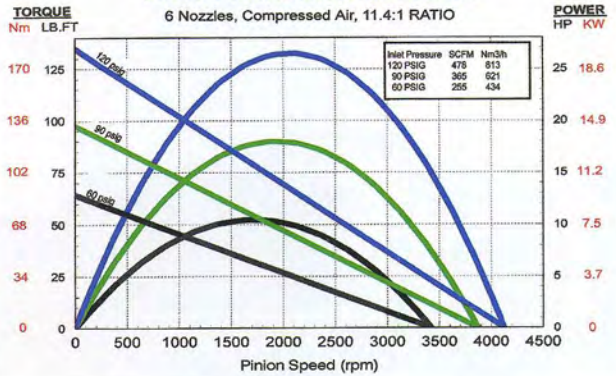
1.8 (45.7)

2.0 (50.8)

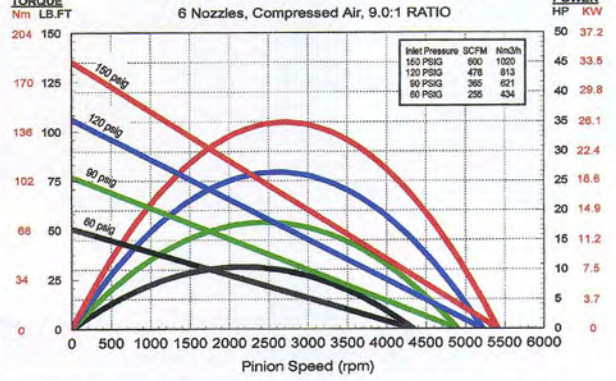
1.8 (45.7)

1.00 (25.40)

T306-I Performance Curve



T306-P Performance Curve



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

SPECIFICATIONS

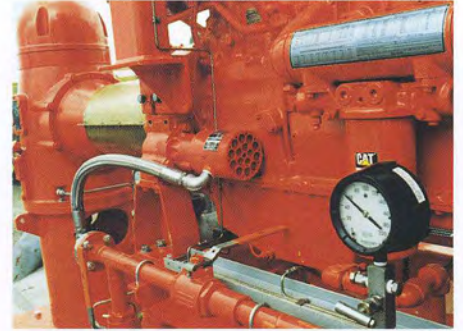
Engines:	Starts Engines up to 20 Liters (1200 CID)	Rotation:	(Facing Pinion Orientation) Righthand/clockwise and Lefthand/counter clockwise
Design Configuration:		Air/Gas Supply:	Compressed Air or Natural Gas
T30-I	Inertia-Engaged	Lubrication:	Grease-Packed For Life, None Required
T30-P	Pre-Engaged	Gear Ratio:	
T30-Y	Pre-Engaged-Overhung	T30-I	11:1
Common Pinion Configurations:	6/8 Standard, 11 Tooth 8/10 Pitch, 12 Tooth T30-Y 3 Mod, 9 Tooth T30-Y 3 Mod, 11 Tooth T30-Y 3.5 Mod, 11 Tooth	T30-P/Y	9:1
Mounting:	SAE 3 Flange SAE 1 Flange (for P only)	Custom:	Other models and configurations available. Consult your local TDI distributor.
Horsepower:	21 hp (15.65 kW) Cranking Power at only 120 psig (8 BAR) 34 hp (25.4 kW) Max.		
Weight:	29 lbs. (13.2 kg) 32 lbs. (14.5 kg) T30-Y		

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/Y	3 (for Small Engines)	150	10.3
T306-P/Y	6 (Standard)	150	10.3
T312-P/Y	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.

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 Unequaled Reliability



Model T306-P on Luggar Marine Diesel Engine



T30-Y installed on a Cummins 5.9L gas engine

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

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.tdi-turbotwin.com.



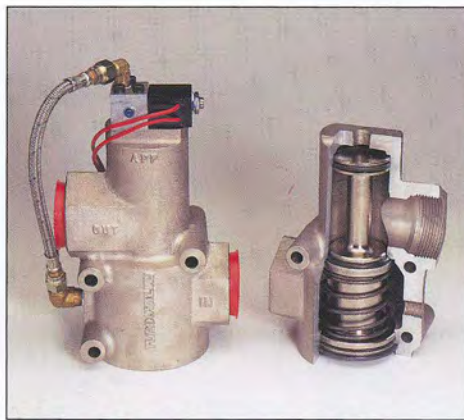
Control Valves

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 PART NUMBER	LITERS	ENGINE MAKE/MODEL	TDI PART NUMBER
6 - 20	CATERPILLAR D3304 G3306 G333C	T306-I Inertia engaged, std. pressure RH or LH rotation	20 - 70	CATERPILLAR G3412	T106-F Inertia engaged, std. pressure RH or LH rotation T112-F Inertia engaged, low pressure RH or LH rotation
	CLIMAX HB4 R81 R41 R61 R110 R165	T312-I Inertia engaged, low pressure RH or LH rotation		COOPER AJAX DPC-80 DP-125 DPC-105 DP-165 DPC-115 DPC-180 DPC-140	
	WAUKESHA 145GK 6WAK 6GAK 6EL F817G WOK 145GZ 6EK 6WAL 1077G	T306-P Pre-engaged, std. pressure RH or LH rotation		WAUKESHA NKR P2154G F1905G L36 6LS 6LK 6NK H2475G	
	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	Above 70	CATERPILLAR G379 G398 3500 Series G399	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
	COOPER AJAX DP60 DPC60	TP306-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 BESSEMER GMSC GMX Series	
	WAUKESHA 130GS 6MS VRG220 VRG232 6BZ 6BL 195GK 130GL VRG330 6BM 6ML 190GL 6MK VRG265 6MZ VRG283 6SR 195GL HS VRG310	T303-Y Pre-engaged, std. pressure RH or LH rotation		COOPER SUPERIOR 6GX-510 6G-510 6GT-510 WAUKESHA F2895G G7042 P48G 8L-AT27G L5788 12VAT25G 5790G 12VAT27G L7040G 16VAT27G(2)	
	WAUKESHA 130GS 6MS VRG220 VRG232 6BZ 6BL 195GK 130GL VRG330 6BM 6ML 190GL 6MK VRG265 6MZ VRG283 6SR 195GL HS VRG310	T303-Y Pre-engaged, std. pressure RH or LH rotation	CATERPILLAR G3606 G3612 (2) G3608 G3616 (2)	T112-V Pre-engaged, std. pressure RH or LH rotation T121-V Pre-engaged, low pressure RH or LH rotation	
	WHITE ENGINES 1XB QXC 1XLBG G2300 G1500 QXC G1600 G3000 GO169H JXLD G2000 G339 QXB YRH JX4D		COOPER SUPERIOR 1700 Series 825 Series 2400 Series WAUKESHA P9390G		
			COOPER AJAX DPC-280 DPC-360 DPC-230 DPC-600 DPC-250 DPC-800 DPC-325	T112-B Inertia engaged, std. pressure LH rotation T121-B Inertia engaged, low pressure LH rotation T112-V Pre-engaged, std. pressure LH rotation T121-V Pre-engaged, low pressure LH rotation	

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

Superior Performance and Reliability from Original Install through Remanufacturing



 Authorized & Certified SERVICE CENTER	
Service Performed By:	ABC Distributor 555 Main Street Anywhere, USA Tel - 555-555-5555
	Date:

Look for this label to assure quality TDI performance.

The Industry's Choice for Performance

Choosing TDI TurboTwin means you've selected the industry's best-performing and most-reliable engine air starter. TurboTwin is the number one choice among system packagers and engine end-users. No one has more turbine-powered air starters in the field. And no one has air starters that last as long.

Keep It Real with Genuine TurboTwin Parts

Precise tolerances, better materials, and proprietary turbine technology are why TurboTwins are the world's longest-lasting, best-performing air starters. When it comes time to replace a part or remanufacture, don't compromise. Keep it real with genuine TurboTwin parts.

Certified TDI Remans

This label assures that your TDI Reman unit was rebuilt by a Certified TDI Service Center using the correct tolerances, procedures, and Genuine TurboTwin parts. The Authorized TDI Reman repair process is identical to our factory manufacturing procedures when building the original starter. Look for the Authorized and Certified Reman SERVICE CENTER label to assure TDI performance and reliability, as well as continued warranty coverage.



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

6800 Poe Avenue
Dayton, OH 45414
Tel: 937-898-9600
Fax: 937-898-8431
www.tdi-turbotwin.com

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