

# Turbo

**SOLUTIONS**  
OE Replacements



**Turbochargers for  
All Engine Applications**



# Turbochargers For All Engine Applications



**CUMMINS**



**PACCAR**



**VOLVO MACK**



**DETROIT**



**X15**



**MX13**



**D13**



**DD15**

***We Also Supply Turbos For Other Manufactures Including:***

**Case • Ford • International • John Deere  
Komatsu • Kubota • Mack • MAN • Mitsubishi  
Perkins • Volvo • Waukesha ....and Many Others**

- All Remanufacturing done in the USA. 
- Turbochargers are Completely Remanufactured. Not Just Rebuilt or Repaired.
- Turbo Industry Best Nationwide Warranty.
- No Hassle Core Policy-100% Core Refund Guaranteed!
- Turbochargers Include VGT Pre-Calibrated Actuator Brain.
- We Also Stock VGT Actuators.
- Custom Remanufacturing for those Hard to find Turbochargers with Fast Turnaround Time.
- Emergency Orders Shipped Same Day/Stock Orders 48-72 Hrs.

# Variable Geometry Technology Specialist

## Turbo Solutions Specializes In The Latest Engine Applications

VGT turbochargers are vertically integrated throughout the industry. Because VGT turbochargers are the most technically advanced turbos in the world, not all remanufacturers can work on VGT Turbos with electronic actuators.

Turbo Solutions' technicians have the expertise and specialized tools to remanufacture these and other Holset turbos to meet or exceed OEM specifications.



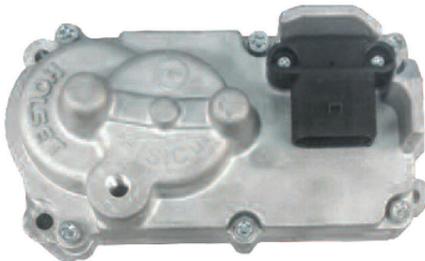
HE351VE



HE451



HE561VE

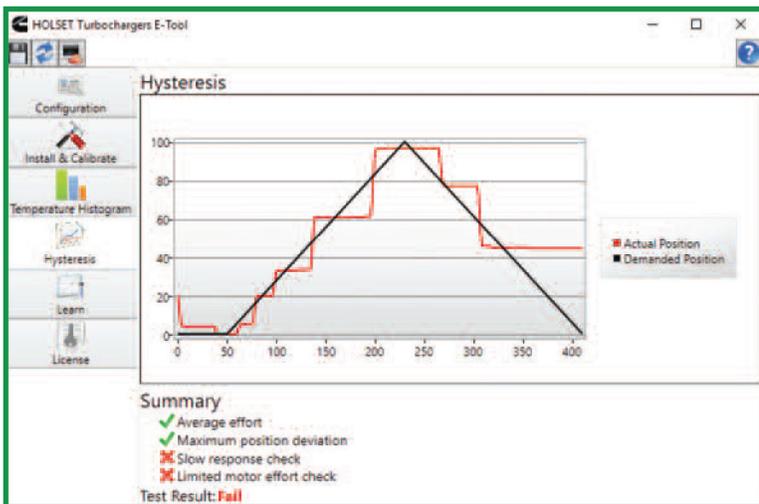


VGT Electric Actuator  
(The Brain)

**Over 8,000 Units  
In Stock  
Ready To Ship!**



Genuine Holset Actuators



## Technology & Testing

Pictured to the left is a screen shot of our Genuine Cummins E-Tool in action, testing VGT Turbocharger Actuators.

This proprietary Tool not only allows us to test but gives us the ability to diagnose common failures.

**We Stock The Most Popular Models**  
**300 Series • 400 Series • 500 Series**  
**ISB • ISM • ISL • ISC • ISX • X15**

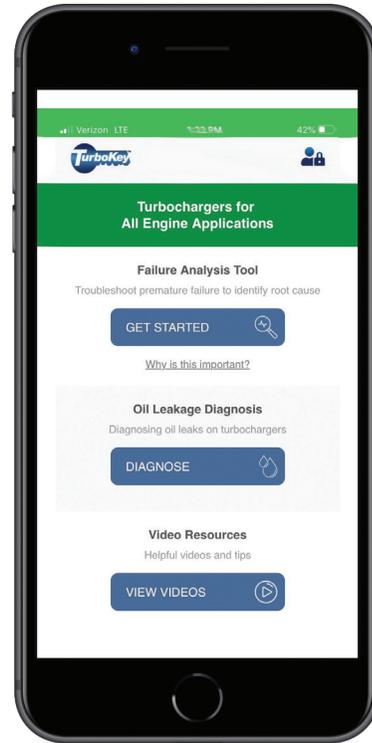
**Offering Genuine Holset NEW and Factory Reman Turbochargers  
as Well as Turbo Solutions Remanufactured Turbochargers.**

# Exclusive Turbo Key Selling Mobile App

## TURBO KEY SELLING APP TECHNOLOGY



- Turbo Installation Help
- Failure Analysis
- Oil Leak Diagnosis
- Technical Videos, including how to clock VGT Turbos



## Tag Identification

### Identifying The Right Turbo For Your Engine

Look for the old ID tag on the current turbo and make note of the tag information



**ID Tag Location: Seal Plate**



**ID Tag Location: Compressor Housing**



**ID Tag Location: Bearing Housing**

**We can also identify by Vehicle Vin # or Engine Serial Number.**

# Turbocharger Application Guide

ENGINE Application	APPLICATION	OEM #	NEW Part Number	REMAN Part Number
<b>For:</b> <b>Caterpillar</b>  	3406B	OR5733	178063N	RBH178063
	3406C, 3406E	OR6986	177148N	RBH177148
	3406E	OR6990	174260N	RBH174260
	3406E, 3456, C16	OR7275	175963N	RBH175963
	C12	OR7084	172743N	RBH172743
	C13	10R2473	752538-0009N	RGH752538-0009
	C13	10R2027	743279-5004N	RGH743279-5004
	C15	10R1887	741154-0011N	RGH741154-0011
	C15	10R1888	741155-0002N	RGH74115-0002

CAT HIGH HORSE POWER	Part Number	Power Rating	Wastegated
	174259N	435HP 1.10 A/R - 21PSI	YES
	174260N	500HP 1.10 A/R - 25PSI	YES
	177148N	600 HP 1.32 A/R - 27PSI	YES
	14969880000N	475-750HP 1.32 A/R 78MM Comp Wheel	NO
	14969880001N	750-850HP 1.58 A/R 80MM Comp Wheel	NO
	14969880002N	750-900HP 1.65 A/R 80MM Comp Wheel	YES
	14969880003N	850-950HP 1.65 A/R 82MM Comp Wheel	YES

ENGINE Application	APPLICATION	OEM #	NEW Part Number	REMAN Part Number
<b>For:</b> <b>Cummins</b>    <b>Our Complete VGT Turbochargers include Calibrated Actuators (Just add a "C" to the end of Part number)</b>	NTC230-444, NTA400 88NT400, NTA855	3801960RX	167050N	NEW ONLY
	ISM, M11	2080237	3590044N	NEW ONLY
	ISM02	4089378RX	REMAN ONLY	RHY1163
	N14	286TC4556000	REMAN ONLY	RBH172034
	N14 E1, N14 Euro 2	3804502RX	3537074N	NEW ONLY
	ISX	4309076RX	REMAN ONLY	RHZ7615
	ISX	4309077RX	REMAN ONLY	RHZ7616
	ISX	4309078RX	REMAN ONLY	RHZ7618
	ISX	2881993RX	REMAN ONLY	RHZ8263
	ISX	2881994RX	REMAN ONLY	RHZ8264
	ISX	2881791RX	REMAN ONLY	RHY0607
	ISX	2882111RX	REMAN ONLY	RHY0503
	ISL G	2843334RX	REMAN ONLY	RHW4658
	X15	5459710RX	REMAN ONLY	RHY8452
	X15	5459711RX	REMAN ONLY	RHY8483

**\*\*Disclaimer: All part numbers are for reference only. Use of manufacturer's name, part numbers, or trademarks are solely used for information purposes.\*\***

# Turbocharger Application Guide

ENGINE Application	APPLICATION	OEM #	NEW Part Number	REMAN Part Number
<b>For: Volvo</b> 	D12	20516147	3599996N	NEW ONLY
	MD11	85013708	REMAN ONLY	RHY1473C
	MD11	85151100	REMAN ONLY	RHY8746C
	D11H, D11J	85151092	REMAN ONLY	RHY3442C
	D11M, EPA17	85151093	REMAN ONLY	RHY6805C
	D13F EPA07	85151094	REMAN ONLY	RHY3446C

ENGINE Application	APPLICATION	OEM #	NEW Part Number	REMAN Part Number
<b>For: Detroit Diesel</b> 	SERIES 60	2585833C91	167735N	RBH167735
	SERIES 60	R23507908	167736N	RBH167736
	SERIES 60	DDE23508410	169011N	RBH169011
	SERIES 60	DDE23508405	169012N	RBH169012
	SERIES 60	23518588	171702N	RBH171702
	SERIES 60	23528059	172743N	RBH172743
	SERIES 60 EGR 12.7/14L	R23534774	758160-0007N	RGH758160-0006
	SERIES 60 EGR 12.7/14L	2354361	758204-9007N	RGH758204-9007
	SERIES 60	1080012R	5352845N	RHZ2845
	DD13	4710967399	13879880047N	RBH13879880047
	DD13	4710962399	13879080050N	RBH13879880050
	DD15	EA4720901480	4720901480N	RDH4720901480

ENGINE Application	APPLICATION	OEM #	NEW Part Number	REMAN Part Number
<b>For: International</b> 	DT466	1820941C93	179077N	RBH179077
	DT466	1824790C91	179078N	RBH179078
	DT466	1825632C91	179079N	RBH179079
	MaxxForce DT	5010580R91	179030N	RBM179030
	MaxxForce DT	5010575R91	179032N	RBM179032
	MaxxForce DT	5010568R91	179035N	RBM179035
	MaxxForce 7	5010720R91	12639880001N	RBM12639880001
	MaxxForce 7	5010722R93	12639880002N	RBM12639880002
	MaxxForce 7	5010724R91	12639880003N	RBM12639880003

ENGINE Application	APPLICATION	OEM #	NEW Part Number	REMAN Part Number
<b>For: Mack</b> 	E7 12L	631GC5172AM	174826N	RBH174826
	E7 12L-300/350 HP	631GC5144AM	174833N	RBH174833
	EM7 E7-350/400	631GC5140AM	174832N	RBH174832
	E7 12L-400/450 HP	631GC5145AM	174828N	RBH174828
	AC460P	631GC5176BM	177591N	RBH177591
	MP7 EPA10	85151093	REMAN ONLY	RHY6805C
	MP8 EPA10	85151095	REMAN ONLY	RHY3446C
	MP7, MP8	85011730	NHA4114 ACTUATOR ONLY - NEW ONLY	
	EPA07-17	85011730	NHA4114 ACTUATOR ONLY - NEW ONLY	

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# Supplier Highlights Summary

## ORDERING INSTRUCTIONS/ IDENTIFICATION

- The ID tag is located on your current Turbo. If you cannot find the Turbo ID tag, please provide your engine serial number or vehicle VIN number.

## AVAILABILITY

- Same day shipping on most units.
- 48-72 hour turnaround on Custom Units (R&R).

## QUALITY

- Turbos are completely cleaned and remanufactured to OEM specifications.
- All Turbochargers are balanced and calibrated using the latest high speed, state of the art equipment available.

## PACKAGING

- All units are shipped with the following:
  - Basic Gaskets Included with Our Turbocharger:
    - Exhaust Manifold Gasket
    - Oil Drain Gasket
    - Oil Feed Gasket
    - VGT Units Include 2 Studs (The other 2 studs are stationary in manifold)
  - Installation Guide / Instructions
  - Warranty Information

## WARRANTY

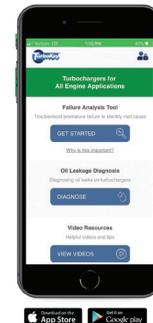
- 1 year unlimited mileage/ hours on all Turbo Solutions branded turbos.
- Standard coverage includes all defective material and workmanship, subject to limitations and exclusions.
- The warranty period begins on the date of the invoice.

## CORE POLICY

- Hassle Free Core Policy-100% Credit Guaranteed as long as the unit is the same unit as the replacement.

## TURBO KEY

- Turbo Installation Help
- Failure Analysis
- Oil Leak Diagnosis
- Technical Videos, including how to clock VGT Turbos



## REMANUFACTURED TURBOCHARGERS

Each turbocharger is remanufactured to meet or exceed original specifications and is balanced to perfection to ensure long lasting, optimum performance.

## REMANUFACTURING PROCESS

- Each unit is completely disassembled, cleaned and inspected for cracks, excessive or abnormal wear prior to remanufacturing
- Any out-of-spec surfaces are corrected and brought back up to spec before reassembly
- All wearable components are replaced with 100% new OE parts
- Throughout the remanufacturing process, all bores and surfaces are inspected and measured to ensure conformity to OE specifications
- All new gaskets and bearings are installed to provide years of hassle free performance
- Oil passage ways are tested for proper pressure and flow to ensure full lubrication to the bearings at all times
- Each turbo is tested after remanufacture to verify it is free of any oil leaks and for proper balance.

# Turbocharger Troubleshooting Matrix For Turbo Diesel Engines

## POSSIBLE CAUSES

PROBLEM DESCRIPTION	Compressor/Turbine wheel damaged	Insufficient power/boost pressure too low	Boost pressure too high	Black smoke	Blue smoke	Turbocharger generates acoustic noise	High oil consumption	Oil leakage at compressor end	Oil leakage at turbine end
Dirty air filter system	●	●			●		●	●	
Intake or pressure hose distorted and/or leaking		●	●	●		●			
Excessive flow resistance in exhaust system & leakage upstream of turbine		●		●	●	●	●	●	
Oil feed and/or drain lines clogged, leaking or distorted					●		●	●	●
Crankcase ventilation clogged and/or distorted					●		●	●	●
Oil coked or sludge in turbocharger center housing					●		●	●	●
Fuel system/injection feed system defective or incorrectly adjusted		●	●	●					
Valve guide, piston rings, engine or cylinder liners worn/increased blow by		●		●	●		●	●	●
Dirty compressor or clogged intercooler		●		●	●	●	●	●	
Boost pressure control swing valve/poppet valve does not close		●		●					
Boost pressure control swing valve/poppet valve does not open			●						
Pipe or hose assy. to actuator valve defective or ruptured		●	●						
Compressor or turbine end sealing rings damaged					●		●	●	●
Turbocharger bearing damage	●	●		●	●	●	●	●	●
Foreign object damage to compressor or turbine wheel	●	●		●		●			
Exhaust gas leak between turbine outlet and exhaust pipe						●			
Engine air collector/cleaner missing or loose gaskets		●		●		●			
Turbine housing/flag damaged	●	●		●		●			
Insufficient oil supply to Turbocharger	●	●		●		●			
Turbo variable ring mechanism inoperable or damaged <small>(Variable geometry turbos only)</small>		●	●	●					

## Top 3 Reasons for Turbocharger Failure



**Before You Fit A New Turbocharger, Find Out What Caused The First Unit To Fail Or You Risk The Replacement Failing As Well**

- **Turbochargers are very reliable: Less than 1% of turbochargers fail due to a manufacturing fault with the turbocharger itself.**
- **95% of turbocharger failures are because of problems with oil starvation, oil contamination or foreign object damage.**

### 1. Contaminated Oil

- A blocked, damaged or poor quality oil filter.
- High carbon build-up in the engine. This can rapidly contaminate even new oil.
- A malfunctioning oil filter bypass valve.
- Engine wear, leaving swarf deposits in the oil.
- Oil that has degraded due to excessive temperatures or extended service intervals.

### 2. Oil Leaks at the Compressor End

- Blocked or restricted air intake filter or air intake pipe.
- Air leaks on intake hoses or at the intercooler.
- Leaks in the EGR system.
- Leaks in the exhaust system.
- Any restriction in the oil drain pipe from the turbo to the engine.
- Restriction in the engine breather.

### 3. Impact Damage

- Items sucked into the air intake because of a damaged, poor quality or missing air filter.
- Damaged hoses allowing small particles to enter the intake.
- Gasket material entering the intake.
- Broken engine components, e.g. injector tips, valves, or fragments of damaged piston.
- Fragments from a previous turbocharger failure.