Installation Guide V1.3

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PSR Performance Turbos

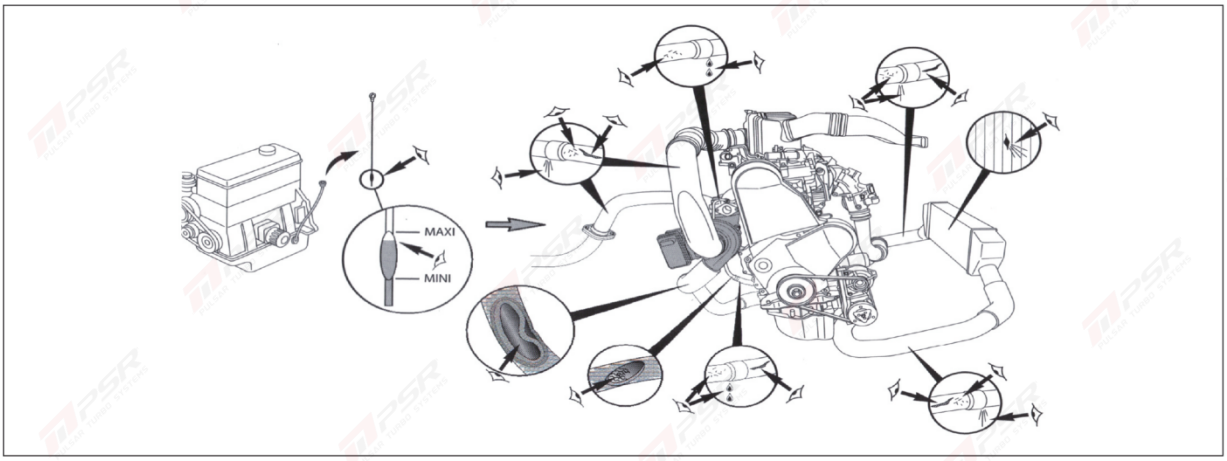
CAUTION: **Please strictly comply with these installation instructions, any noncompliance may void the warranty.**

Turbochargers shall only be installed by professional automotive mechanics with necessary qualification, knowledge and equipment.

I. IMPORTANT

A. Determine the cause for the damage to the previous turbo and rectify this before installing a replacement turbocharger.

B. Inspect, clean/replace hoses and pipes of the entire engine breather & exhaust systems, be certain they' re free from splits, cracks, holes, oil, dirt or other foreign objects.

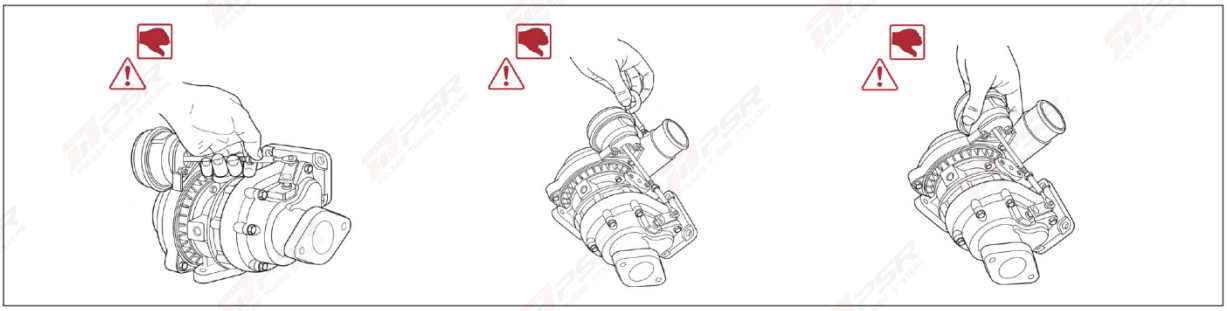


C. Use new OEM quality air, oil and fuel filters and full synthetic engine oil with a minimum of 30 weight before installing the turbo, replace them at least every 6 months/5000km. (more frequently if recommended by the engine builder)

D. Use NEW oil feed and drain lines when installing a replacement turbocharger, an inline oil filter to the turbocharger is also recommended.

E. Ensure that correct and new gaskets are used. DO NOT use liquid gasket substances or silicone(RTV) on any turbo flanges.

F. Careful handling the turbo, grabbing it by the actuator, rods or hoses may result in severe damage. Prevent dirt and debris from entering any part of the turbocharger during entire installation process.



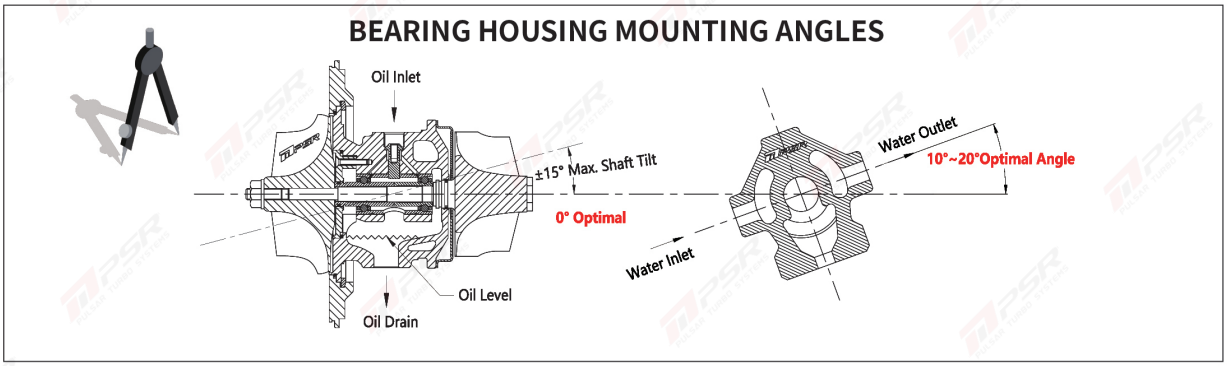
II. TURBO CLOCKING

A. Compressor and turbine housings can be rotated in order to align with all the air and exhaust connections. Loosen the housing bolts or V-Band nut(s) to rotate to the desired angle(s). Apply high Temp Loctite to the threads when re-tighten the bolts from side to side.

The torque values are specified below:

	Steel & Cast Iron Threads Max. Torque		Aluminum Threads Max. Torque	
Thread Size	ft*lb	N*m	ft*lb	N*m
M6	6	8	5	7
M8	16	21	12	16
M10	30	41	24	33
M12	55	75	43	58
M14	87	118	68	92
5/16''	27	37	15	20
3/8''	49	67	27	37
7/16''	78	106	43	58
1/2''	120	163	66	89
1/4'' UNF (V-BAND Bolt)	Coat thread anti-seize compound. Initially tighten the Nut to 18Nm(to seat V-Band) then loosen to 6Nm, Re-tighten to 13-15Nm final torque.			
1/2'' UNF	Inverted Flare oil supply thread	35	/	/

B. The center housing needs to have proper angles for a correctly functioning turbo. The optimal turbocharger shaft tilt is 0 degree, excessive angle may cause oil leak or exhaust smoke. If the turbo also has water cooling ports, the ports should be at an angle of 10° to 20° from the horizontal with the coolant entering from the low port to have optimal cooling effect.



C. On internal WG units the WG must have the actuator realigned to suit any new position and preload reset.

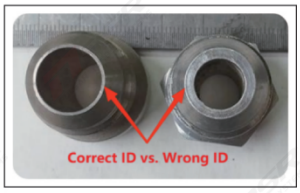
III. OIL SUPPLY

In all ball bearing applications seeing more than 60psi hot engine oil pressure, the oil pressure "after" the restrictor must be **measured** by a gauge(use a Tee) and should be between **40-45** PSI for optimal turbo performance. Journal bearing turbos should not have restrictors unless specified. Alternatively, an **oil pressure regulator** is the hassle free and preferred option to deliver full flow and the correct oil pressure range. An inline oil filter is also recommend to protect the turbo from be damaged by metal fragments in the oil.

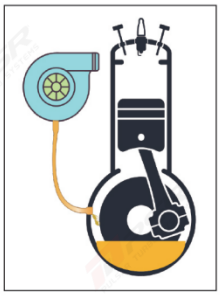
PSR P/N: 874300001

	Journal Bearing	Ball Bearing
Recommended Size	-4AN	-4AN
Oil Restrictor/Regulator	Not needed unless oil pressure induced leakage	Highly Recommended
Inline Oil filter	Recommended	Recommended
Oil Pressure After Restrictor	/	40-45 PSI at max. engine speed

IV. OIL DRAIN


Correct ID vs. Wrong ID

A -10AN is typically sufficient for proper oil drainage for small and mid-frame turbos, a -12AN is good for large frame turbos, but the larger the oil drain, the less likely the oil leakage. In general, check the IDs of all the drain fittings and line, they must be larger than the drain hole on the bearing housing.



Avoid 90 degree fittings if possible, the line must return above the oil level and have sufficient "fall" and be free of kinks. The oil drains away from the turbo by gravity, so It' s important for the return line not to have any dips or loops, the line must enter the engine at a level higher than the oil and crankcase must have sufficient venting.

V. START ENGINE

A. Before starting the engine, the turbo **MUST** be pre-oiled. Pour clean oil into the oil feed hole and slowly rotate the rotor assembly until oil flows out of the oil drain. Repeat this process and then connect the oil feed line.

B. Crank the engine to develop oil pressure with the fuel shut off until engine oil drains freely from the turbo and then connect the oil drain pipe.

C. Start the engine and idle for about 3 to 5 minutes, check that all air, gas, oil and coolant connections are tight and free from leakage. Slowly accelerate the engine and check for potential leakages under pressure again, if any leakage is detected, fix the issue immediately.