The Line Shaft

The Official Newsletter of the

NORTH JERSEY ANTIQUE ENGINE & MACHINE CLUB

April 2013

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Founded on October 15th, 1979 by: Arthur Goble, Fred W. Westbrook, John Snook, Roy Bischoff & Lewis Quince

Our last months meeting was attended by 32 members. Anne Marie was not able to attend the meeting so, Andy gave the financial report. As of right now, we are looking pretty good for the up and coming summer activities. Our members have been really good about getting their dues paid. This makes keeping track of the dues a lot easer for Anne Marie.

Blase had some good news at our last meeting. He was told, by the Fairground Committee, that we would be getting a new roof for the Engine Shed. This is a real good thing, as the water soaked insulation is starting to fall down. It's an excellent thing they got a handle on this before rain water started falling on the more collectable antiques we are responsible for.

COMING EVENTS

Military Transport Association Show

April 27 and 28th. If you could bring a tractor , truck or engine it would be appreciated. Call Jeff if you need more information.

Memorial Day Parade in Branchville

See Anne Marie & Kevin Adams for info

Denville Days Parade

June 9th. Parade will start at the Train Station and end at Gardner Field. More info and direction in the next news letter.

REMINDER: 2013 DUES ARE DUE!

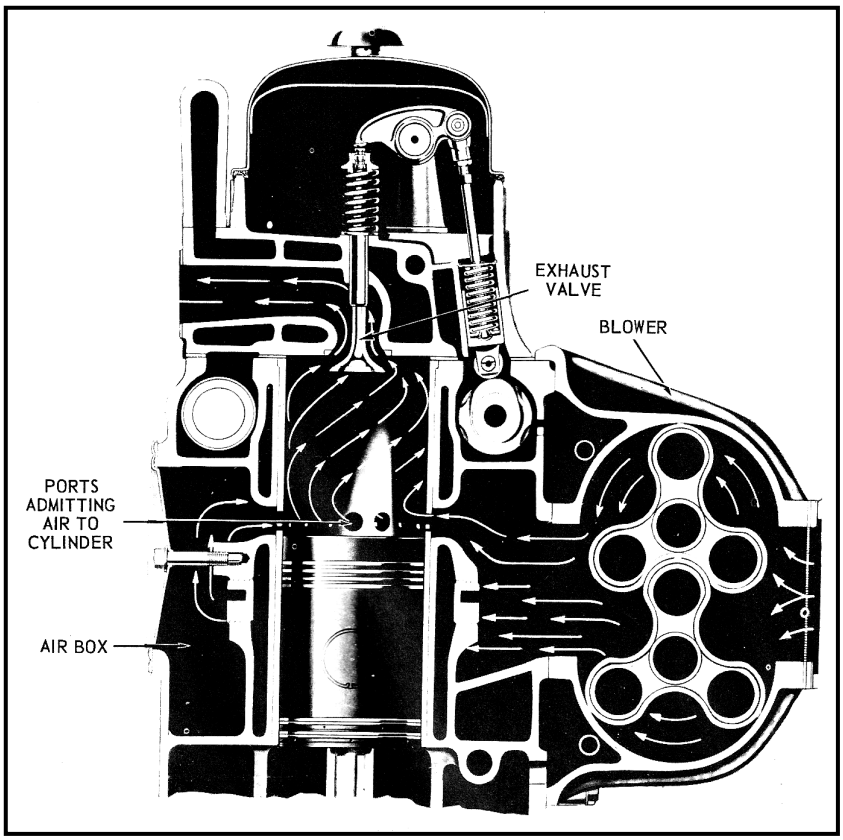
Annual dues are $25.00 and payable at the monthly meeting or send to:

NJAE&MC-Anne Marie Adams
7 Gunn Rd.
Branchville, NJ 07826

Our next meeting will be 7PM at the administration building on April 11th 2013

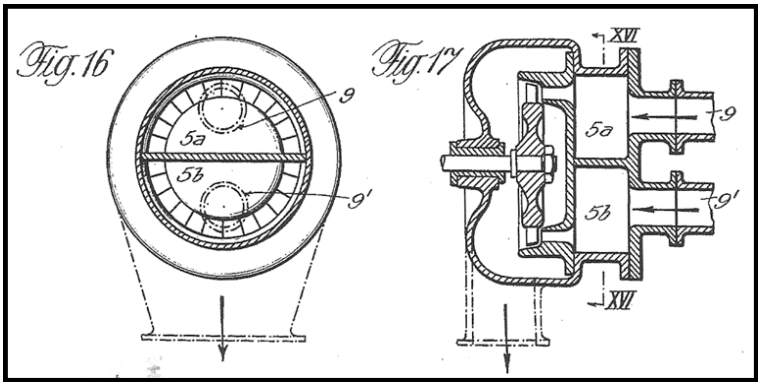
The turbocharger...

Predating the turbocharger...the concept of forced air induction was patented in 1885 by Gottlieb Daimler, a pre-1900 engine and automotive pioneer from Germany...whose name lives on as *Daimler Trucks North America*!



By the first decades of the 20th century, many manufacturers of both gasoline and particularly diesel engines were using forced induction, generally in the form of positive displacement lobe (roots), centrifugal or piston type compressors, "mechanically" driven off the engines crankshaft or gear train or "externally" by electricity. These compressors (probably better described as air-movers) provided a steady flow of air to scavenge (sweep the burned gases from the cylinder) on the emerging 2-cycle engines and as superchargers (raising the intake pressure and air density higher than natural aspiration) on 4-cycle engines. When used as superchargers, they increased the concentration (amount) of air packed into an engine, improved its volumetric efficiency and allowed more fuel to be burned...achieving considerably higher power. Unfortunately, they're tied to the rotating speed of the engine and are parasitic in that they "rob" significant engine HP to operate themselves, but as superchargers the benefits out-weight the costs...they produce 3-4 times the horsepower they require to operate. The real negative was (and is) the additional weight, bulk, and cost they add to the engine in the form of internal or external components and hardware on their drive side and the increased size due to the parasitic loss...a 1,000 HP engine is structurally a 1,150 HP engine; 150 to drive the supercharger and 1,000 to the flywheel.

In 1905 Dr. Afred Buchi, working as the head engineer for the Swiss diesel manufacturer *Sulzer Bros.,* developed and patented the *turbine-exhaust-compressor*...a non-parasitic supercharger driven by the heat & pulses in an engines exhaust gases and more dependent on engine load than engine speed. The invention was "not" met with much interest at the time and Buchi received a new watch and a bottle of cognac from his employer as a bonus.

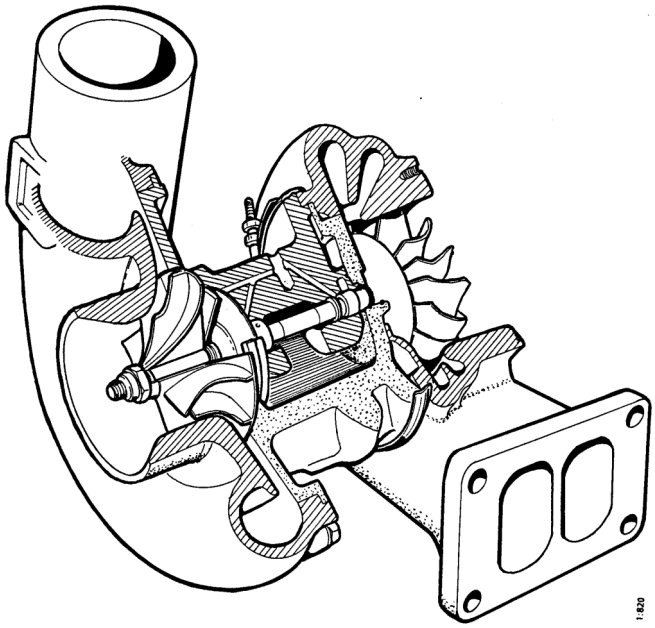


By WWI some aircraft engines and marine engines began using low speed turbochargers with limited success.

Post WWI improvements were heavy on the American side of the Atlantic with Earl Sherbondy, a well known aviation engineer, patenting a poppet valve exhaust by-pass controller...waste gate...for the *turbo-compressor* and General Electric taking the forefront in world design with their *superturbocharger*...later shortened to turbocharger.

The emphasis, during the 1920s, 30s and 40s in turbocharger development was in the piston engine aircraft industry. The higher an airplane flies, the less frictional and aerodynamic drag on the body, but the lower air pressure (intake density) starves the engine of air. The mechanically driven multi-speed superchargers worked well at high altitudes, but the turbocharger worked better at "extreme" high altitudes. The WWII American B17 Flying Fortress, later model B24 Liberators and B29 Superfortress heavy bombers and the P-47 Thunderbolt & P-38 Lightning fighter-bombers were turbocharged and capable of extreme altitude. The high flying B-17 and 24's allowed the Army Airforce to pursue day-light precision bombing of German and eastern European industrial and civilian targets. Although the B17 & 24 bombers were "not" immune to attack by German fighters, the mechanically supercharged fighters were at a distinct disadvantage due to a lack of power at extreme altitude...the exception being the Focke-Wulf 190B, the only AXIS turbocharged aircraft. The B29s, which flew against Japan and made the bulk of their (fire bomb) attacks at low altitude, were virtually invulnerable to counter-attack on their way to and from Japan.

Post WWII, the small size of the turbo charger (large by today's standards) intrigued the automotive, truck and construction equipment industry. It was apparent that with only slight modifications to <u>existing</u> naturally aspirated engines, low cost, higher HP engines could be developed with little to any increase in size. However, to make it a reality, the existing turbochargers had to be sped-up, made smaller and be capable of rapid response...reduce the turbo-lag. This was accomplished by using new lighter state-of-the-art materials and smaller re-engineered components, which allowed the spool-up to happen quickly, by improvements to the bearings of the rotating assembly reducing drag and friction and by improved waste gate response. American engineers and manufacturers Cliff Garret and Louie Schwitzer were highly instrumental in the transition from aircraft and marine usage to vehicular service and are considered the pathfinders of this industry. They would be joined by other manufacturers, generally with an aircraft or turbine background, including TRW (USA), Holset (Britain) and Hispano-Suiza (Spain). By the late 50's, turbochargers were becoming common on diesel trucks and construction equipment and "everybody" jumped into the game.



The first production gasoline powered automotive applications were the 1962 Olds Cutlass Jetfire and Chevrolet Corvair Monza Spyder.

Today it is rare to see a diesel w/o a turbocharger and whereas power and performance initially drove early development, fuel savings and emissions have become the major focus of the industry today.

MARKETPLACE

Wanted: 14.9 x24 used tires...Contact Ken Reuter 973-670-1646

For Sale: International Cub Cadet 102. $400.00...Contact Paul 201-835-5924

Wanted: Backhoes, loaders, compact tractors, mini-exc., skid steer loaders and farm tractors, any condition...Contact Robert Norman 845-858-8242

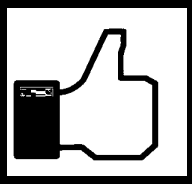
For Sale: Steam Bent Ash hardwood walking plow handles...Contact Bruce Mitchell 973-702-1012

For Sale: Antique Ford and John Deere tractors...Contact Don Donofrio 973-627-3706

For Sale: 1976 Ford Super Cab Pickup, Trailer Special, 460ci, auto trans Asking $3500.00 or partial trade for antique tractor Contact Jim Dunlop 973-219-9694

For Sale: Allis Chalmers garden tractor,912 hydro/914 shuttle, Simplicity 3416 Shuttle, many extra parts and attachments which go along with tractors. Make me an offer I can't refuse...Mark Giovanetti 973-986-5051

Check out our FACEBOOK PAGE!



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