Fiat Auto

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Ritmo Turbo DS

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Ritmo Turbodiesel

Now a new diesel Ritmo: the 1929 cc Turbodiesel developing 80 bhp at 4200 rpm with a maximum torque of 17.5 mkg at 2400 rpm. With a top speed of 170 km/h, this is performance unmatched by any other medium sized diesel.

Apart from its new engine, the Ritmo Turbodiesel benefits from major mechanical improvements, new trim levels, and luxury equipment. In detail:

— front brakes with bigger discs
— power steering
— ZF five speed gearbox
— new facia
— new upholstery fabrics
— height adjustable steering wheel
— power windows
— central door look

The exterior features adhesive strips along the sides, foglights in the bumpers, newly designed integral wheel hub caps.

The Ritmo Turbodiesel is Fiat's answer to the demands from drivers of medium sized diesels who look for performance and standards of comfort to an ever greater degree.
One of the fastest, quickest-off-the-mark diesel cars (with overtaking power to match) in its class, the new Ritmo is as reliable, comfortable, and functional as all other Ritmos.

The Ritmo up to date as ever

With the addition of the new Turbodiesel, there are now eigth Ritmo versions:

— 1116 cc 58 bhp Ritmo 60 L/CL/Super
— 1116 cc 55 bhp Ritmo Energy Saving
— 1299 cc 68 bhp Ritmo 70 CL with automatic gearbox
— 1301 cc 65 bhp Ritmo 70 Super
— 1585 cc 105 bhp Ritmo 100 Super
— 1995 cc 130 bhp Ritmo Abarth 130 TC
— 1697 cc 60 bhp Ritmo L/CL Diesel
— 1929 cc 80 bhp Ritmo Turbodiesel

This comprehensive range confirms the extreme versatility of the Ritmo, with a capacity to develop that means it is never outdated, always sparkling, reliable and economical. The Ritmo range is designed for customers who seek practicality in a car. Customers who want a reliable surprise-free car, that represents value for money.

But that's not all the Ritmo can offer. Especially at the top end of the range, it's as sporty a performer as you could wish. Proof? How about the top Ritmo 130 TC with its numerous victories in rallies and national campionships, such as the 1984 Italian Overall title, the 1984 Mountain Trophy and, in 1985, the Group A European Challenge Cup.

The Ritmo is one of Fiat's major models in production terms with 117,000 built in 1985, 2,100,000 since it was launched in 1978. Since the range was revamped in June of last year, 80,000 Ritmos have been sold in Italy with 60% of the buyers opting for petrol, 40% for diesel versions.

The Diesel car market

The Italian diesel market is now substantial: 425,500 were sold in 1984, 26% of total registrations (1,636,807). In 1985, the figure rose to 440,000 out of 1,720,000, or 25.5%.

The European figures are smaller but still significant. Out of a total market of 9,870,000 vehicles sold, 1,456,000 or 15% were diesels.

In the Ritmo's own segment, diesels accounted for 29% (nearly 108,000 cars) of the 373,000 vehicles sold, or rather higher than the general average.

Italy apart, Segment C registrations numbered some 2 million units of which diesels accounted for about 14% of the market in the main European countries.

So there is no lack of interest in the diesel engine in Segment C with customers seeking the fuel and running economy that are the diesel car's basic characteristics.

And if the customer wants to combine economy with performance at least as scintillating as a petrol engine car provide, then that's where the turbocharger comes in. And the new Ritmo Turbo DS is the most modern, complete, fast and powerful of the turbodiesels.

The new engine of the Ritmo Turbodiesel

The Ritmo's Turbodiesel engine offers a number of advanced features commonly only found together on bigger cars. With its cast iron engine block and light alloy cylinder head, the engine on the Ritmo Turbo DS incorporates the following basic features:

— 4 cylinders in line
— total displacement: 1929 cc
— bore x stroke: 82.6 × 90 mm
— max power: 80 bhp at 4200 rpm
— max torque: 17.5 mkg at 2400 rpm
— KKK turbocharger with 0.8 bar max turbocharging pressure
— intercooler
— oil radiator

The K16 type KKK turbocharger is a smaller, lighter new generation model. With a top turning speed of 120,000 rpm, it supplies 0.8 bar turbocharging pressure.

The turbocharger cuts in at around 1200 rpm and peaks at about 2400 rpm where it remains constant.

Another distinguishing feature is the built-in wastegate that diverts the exhaust gas past the turbine into the exhaust pipe when turbocharging pressure reaches the maximum 0.8 bar.

The temperature of the exhaust gas as it enters the turbine is no higher than 660°C (against an average 750°C on other turbodiesels and the 900-950°C of petrol turbos). This of course enhances reliability.

Intercooler

The intercooler sited ahead of the water radiator serves to reduce intake air temperature by some 60°, meaning better combustion chamber filling and improved engine efficiency.

Oil radiator

Another special feature of the Ritmo Turbodiesel is the aluminium oil radiator placed in front of the coolant radiator beside the intercooler, a rational layout that maximises the dynamic flow of the air through the front grille.

The oil filter is fitted with a bypass valve that cuts off the oil flow to the radiator when oli temperature is lowered.

Water radiator

The water radiator features two electric fans with two speeds that come into play on the basis of water temperature.

Engine block

This is very like the block on the aspirated engine, the difference being the presence of 4 nozzles, one per cylinder, that spray a jet of oil inside the piston to cool the crown (increased mechanical reliability). The engine block also adopts trimetallic main and big end bearings to offset the bigger loads generated by the higher combustion pressure. A turbo lubrication oil tap is also fitted.

Cylinder head

Distribution is by single overhead camshaft driven by a toothed belt that drives the valves directly, i.e. with no rocker arms. The belt also drives the injection pump (a new rotary Bosch VEL 184 type with the LDA device that adjusts diesel oil intake to turbocharging pressure) and the brake servo air pump which is also new.

The induction valves are coated with extra hard stellite. The cylinder head gasket is also new, made of special material with a metal rim whose thickness and width vary in response to different pressure values. The compression ratio is 20 : 1.

Pistons

The aluminium alloy pistons have cast iron inserts and are newly profiled to handle the greater combustion pressure. The piston pin is drilled in a special shape so that the shape modifies under maximum engine performance.

Other new mechanical features

Gearbox

Given the extremely high torque offered by the Turbodiesel engine, the Ritmo adopts a sophisticated 5 speed ZF gearbox. Fast and accurate in engagement, the box has dual rod control especially designed to be quiet and vibration free.

With a final ratio of 3.048 : 1, you can drive at 170 km/h in 5th with the engine turning at only 4200 rpm.
At 140, still in 5th gear, rpm's are only 3400.

Brakes

Compared to the other Ritmo's, the front brakes have bigger discs (from 227 to 257 mm) with free floating calipers and protected tracks.

The other braking system components are unchanged:
— rear drums
— Duplex hydraulic control with vacuum servo
— pressure limiting valve on rear wheels.

Power steering

The standard TRW power steering is both responsive and precise: the rack shifts 40 mm with each turn of the wheel. Lock to lock takes 3.4 turns.

Suspension

All round independent. The MacPherson type front suspension incorporates a thicker (from 20 to 22 mm) antiroll bar than the other Ritmo versions. At the rear, the system uses telescopic struts, transverse arms, and a self-stabilising transverse leaf spring.

Wheels and tyres

The wheels are in pressed steel with 14″ × 5½ rims. The low profile tyres are 165/65 SR 14 units.

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Bodywork

The Ritmo Turbodiesel has a trim level of the Super type but differs from the other Ritmos for the following variants:

Exteriors

— foglights built into the bumpers
— new integral wheel hub caps
— adhesive strips along the sides.

Interiors

— facia with oil pressure and turbopressure gauges and turbopressure warning light
— steering wheel with « Turbo DS » logo
— new seat and door panel fabrics in grey with increasingly wide horizontal stripes in black which repeat the side strip motif.

Body colours

— Corfu white
— racing red
— metallic dark blue (optional)
— metallic quartz grey (optional)
— metallic grey (optional)

Standard and optional equipment

Standard items

— 5 speed gearbox
— power steering
— tinted windows
— external rearview mirror on passenger side
— inertia-reel front seat belts
— electric windows and central door locking
— rear screen wash/wipe and front head restraints

Options

— sun roof
— light alloy wheel rims
— split rear seat
— supplementary wheel arches
— metallic paint
— inertia-reel rear seat belt
— indicator for water in diesel oil.

Ritmo Turbo DS

Specification

Engine

Main features	
Layout	transversely mounted at front
Cycle-stroke	Diesel - 4, indirect injection
No. of cylinders	4 in line
Bore × stroke	82.6 × 90 mm
Bore to stroke ratio	1.09
Cylinder capacity	1929 cc
Compression ratio	20 to 1
Max power output (EEC)	80 bhp (59 kW)
at	4200 rpm
Max torque (EEC)	17.5 mkg (172 Nm)
at	2400 rpm
Fuel required	Diesel oil
Structural layout	
Type	831.D1.000
Cylinder spacings	91-91-91 mm
Main bearings	5
Main journal diameter	52.990 ÷ 53.010 mm
Cylinder block	cast iron
Cylinder head	light alloy
Timing gear	
Valve arrangement	overhead and in line
Camshaft	1 overhead
Timing control	toothed belt
Phasing::	tappet play = 0.5 mm
Intake { beginning	6° before TDC
Intake { end	26° after BDT
Exhaust { beginning	26° before BDC
Exhaust { end	6° after TDC
Fuel feed	
Type	supercharging by KKK turbocharger and air-to-air heat exchanger
Injection pump	Bosch type VE 4/9F 2100 L 184, rotary distribution whith boost control
Air cleaner	dry-type, paper cartridge
Turbo-blower	KKK K16 with waste-gate
Supercharging pressure	0,8 bar
Injection	
Type	indirect, combustion pre-chamber
Injection order	1-3-4-2
Priming angle	0 ± 1°
Nozzles	Bosch-type DN 12 SD 1750
Nozzle holders	Bosch-type KCA 30 S 41
Lubrication	
Type	forced-feed, with air/oil heat exchanger
Pump	gear-type
Oil filter (on main circuit)	cartridge, full flow
Engine cooling	
Type	by cooling liquid, radiator, additional expansion tank, centrifugal pump
Control	thermostat
Fan	electric, two fans controlled from a thermostatic switch on the radiator

Power drive	to front wheels through half-shafts connected to the differential by external constant velocity joints and to the wheels by constant velocity ball joints
Clutch	dry, single plate with engagement disc spring
Control	mechanical
Friction rings diameter (O.D. × I.D.)	215 × 145 mm
Gearbox	5-speed
Transmission ratios 1st	3.583 : 1
2nd	2.235 : 1
3rd	1.524 : 1
4th	1.154 : 1
5th	0.838 : 1
Reverse	3.660 : 1
Differential gear	in transmission housing
Final drive — type	coil cylindrical
Final drive — ratio - no of teeth	3.048 : 1 (21/64)

Chassis

Braking system	front discs with floating caliper; rear drums with self-centering shoes and automatic play take-up
Control	pedal, with vacuum brake servo, split hydraulic independent circuits
Load proportioning valve	on rear brake hydraulic circuit
Front discs:	
— diameter	257 mm
— pads area	144 cm²
— friction area	1190 cm²
Rear drums:	
— diameter	185 mm
— linings: width × length	30 × 180 mm
— linings area	215 cm²
— friction area	350 cm²
Parking brake	acting on the shoes of the rear drums, mechanical control
Front suspension	independent with lower wishbones and antiroll bar
Springs	coil
Flexibility at the wheel	0.45 mm/kg
Wheel wobble — upper	75 mm
Wheel wobble — lower	76 mm
Dampers	hydraulic, telescopic, double-acting
Wheel position (unladen):	
— camber	+1° 10' ÷ +2° 10'
— caster	+1° ÷ +2°
— toe-in	+1 ÷ −1 mm
Rear suspension	independent with lower wishbones
Spring	stabilising transverse leaf
Flexibility at the wheel	0.56 mm/kg
Wheel wobble — upper	80 mm
Wheel wobble — lower	132 mm
Dampers	hydraulic, telescopic, double-acting
Wheel position (unladen):	
— camber	−30' ÷ +30'
— toe-in	0 ÷ +4 mm
Steering	rack-and-pinion, servo-assisted
Steering column	collapsible, two universal joints
Turning circle	10.3 m
Steering wheel turns (lock to lock)	3.4
Road wheels	
Rims	pressed steel 5½ J×14" H1
Tyres	165/65 SR 14 or 165/65 R 14 T

Inflating pressure	
— front { medium load	2.2 bar
— front { full load	2.2 bar
— rear { medium load	2.2 bar
— rear { full load	2.4 bar

Electrical equipment

Voltage	12 V
Alternator	65 A
Voltage regulator	electronic, built into the alternator
Starter motor	2.2 kW
Battery capacity	60 Ah (216 kC)

Weights

Kerb weight (DIN)*	1000 kg
Distribution { front	65.5%
Distribution { rear	34.5%
Vehicle weight (laden)	1400 kg
Distribution { front	54%
Distribution { rear	46%
Max payload	400 kg
No of seats	5
Max towing weight	1100 kg

* inclusive of fuel, water, spare wheel and accessoires

Performance

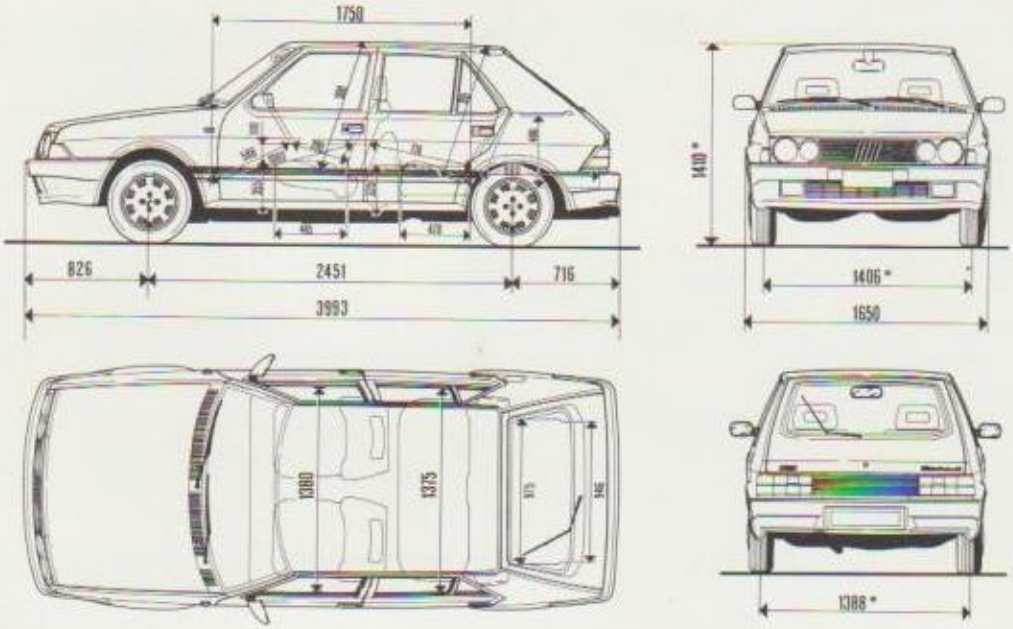
Top speed	170 km/h
Speed in 5th at 1000 rpm	40.7 km/h
Power to weight ratio { kg/bhp	12.5
Power to weight ratio { kg/kW	16.9
Max gradient climbable (laden)	40%
Acceleration (2 adults + 20 kg) (secs)	
— 0 ÷ 100 km/h	12.9
— 0 ÷ 1000 m	34.4
Pickup from 40 km/h (in 5th) (2 adults + 20 kg) (secs)	
— over 1000 m	40.9
Fuel consumption (l/100 km)	
— at 90 km/h	4.3
— at 120 km/h	6.1
— urban cycle	6.0
— ECE mean	5.5

Supplies

	dm³	kg
Fuel tank capacity	55	42.3
including a reserve of	5 ÷ 8	—
Engine radiator, expansion tank, and heating system liquid	7.5	—
Oil pan and filter	4.95	4.4
Total capacity of pan, filter and ducting oil	5.5	4.9
Gearbox and differential oil	3.26	2.95
Steering box, pump, ducts	0.95	0.85
Front and rear hydraulic brake circuits liquid	0.387	0.387
Windscreen washer bottle	3	—

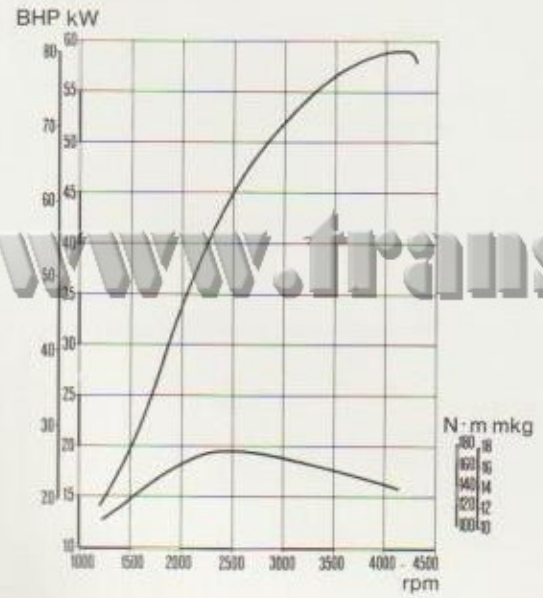
Dimensions

(*) unladen



Luggage compartment capacity with rear seat in upright position: 370 dm³;
with rear seat folded over: 1,250 dm³.

Characteristic Engine Curves (EEC)



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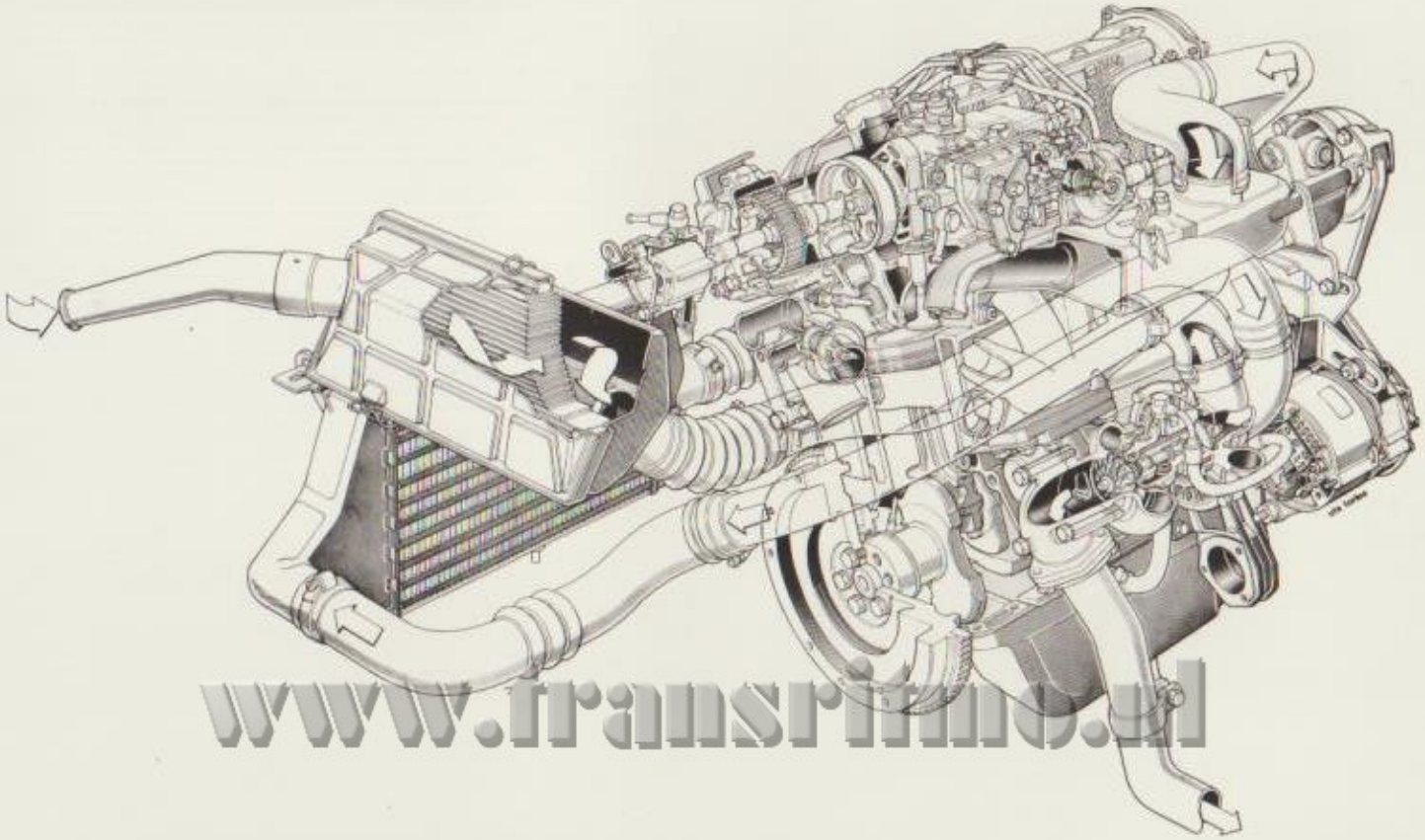

Ritmo Turbo DS

Spaccato motore (1929 cm³, 80 CV)
Engine cutout (1929 cm³, 80 bhp)

Vue éclatée du moteur (1929 cm³, 80 ch)
Aufriss des Motors (1929 cm³, 80 PS)

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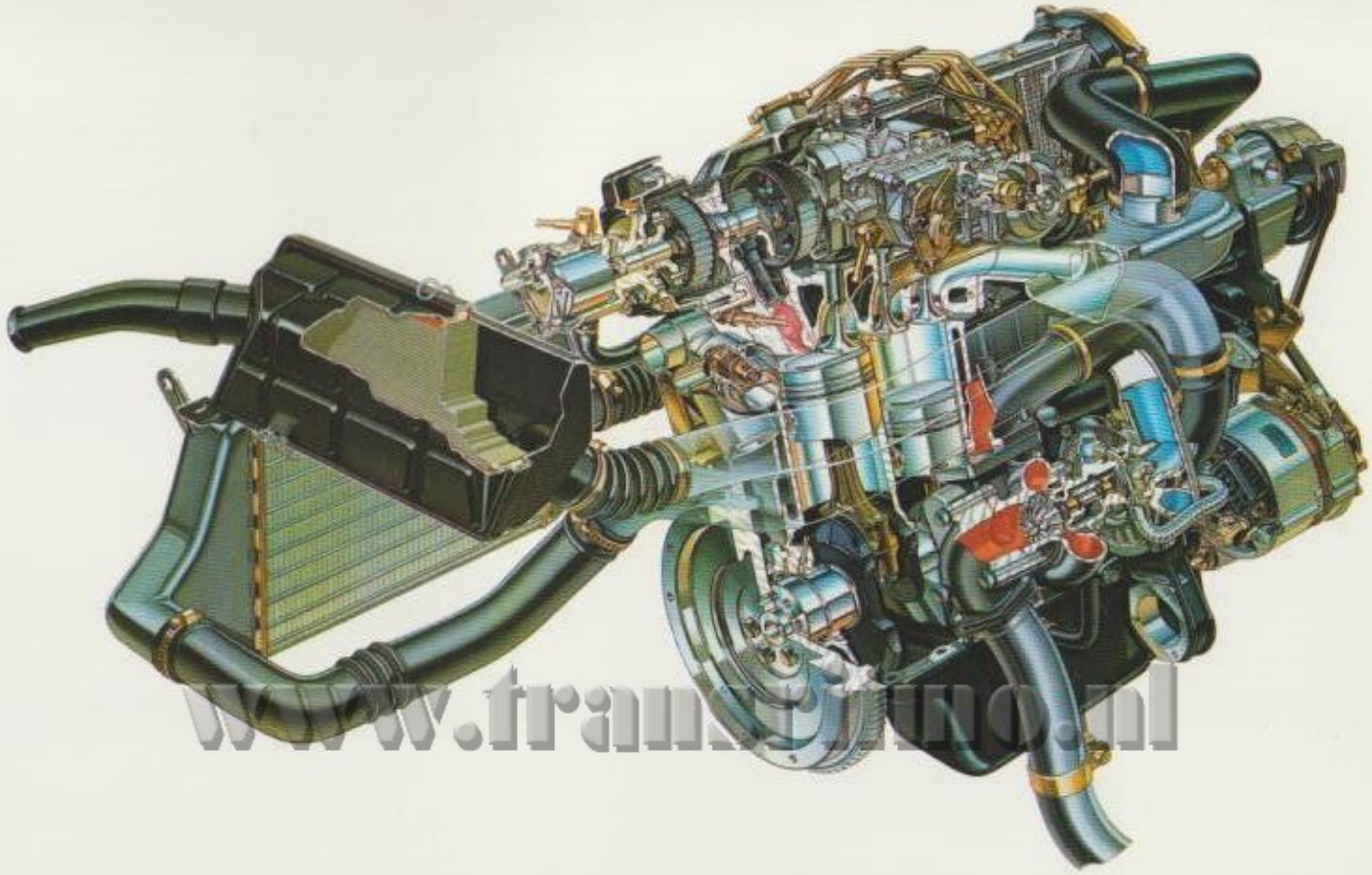

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