

## TOP FORM

**The best selling crossover from the Bologna company tackles the hardest reliability test: 50,000 km in only eight months, between March and November 2019.**

**Multistrada has showed its true colours. The jewel on the crown was certainly the engine: between the start and the end of the journey it gained over 4 HP, did not consume any oil and, once we took it apart, its health was perfect.**

**A pierced radiator and an attempted theft could not stop it**





**INTO THE SECRETS OF MECHANICS**

Here it is, completely disassembled, the protagonist of our sixth Long Test: before her, our tests focused on, in the following order: Yamaha Tracer 900, Honda Africa Twin 1000, BMW R 1200 RT, Suzuki V-Strom 1000 XT and Kawasaki Versys 650.



# THE PROTAGONISTS



Our own Fabio “couch potato” Manenti drove his Multistrada at the discovery of most of Europe. A basically uninterrupted fast ride, excluding a few stops required for technical servicing, enjoying winding roads and good food



## UP AND DOWN MOUNTAIN ROADS

**1 and 2.** Fabio and his wife Paola endured a 50,000 km trip, mostly on mountain itineraries.

**3.** A tall and narrow tunnel leading to the Henraux marble quarry, not far from Isola Santa, Garfagnana.

**4.** Local ham, obviously from Sauris, for a much deserved break.

Our travellers are on **Facebook**, with the name **“Fabio E Paola Manenti”** where they show, in real time, their two-wheel travels.

As compared with the standard version, “our” Multistrada was equipped with side panniers (730 Euro), top case (488), central stand (228) and comfort seat (228), 20 mm higher than the standard one.





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#### TO SERVE AND PROTECT

Our long time tester took on this journey with two inseparable “travel mates”, Alpinestars apparel and his Arai helmet. That’s really the best in terms of safety and protection. **2 and 3.** Alpinestars also supplied the Tech-Air Street airbag, the first of this kind that is not connected to the vehicle. The airbag is contained, together with the activation, inflation and control systems, in a vest to be worn with a compatible jacket. **1.** Arai Tour X4 is a helmet designed for such crossover bikes as the Multistrada, suitable as it is to off-road terrains. Above, our own Manenti on a dirt road leading to the Trabacche caves near Ragusa, Sicily.

## TECHNICAL DATA

**ENGINE:** L-shaped twin cylinder, 4 stroke, bore x stroke 94x67.5 mm, displacement 937 cc, compression ratio 12.6:1, desmodromic timing system with double overhead camshaft, maximum power 113 HP (83.1 kW) at 9,000 rpm, maximum torque 9.8 kgm (96 Nm) at 7,750 rpm.

**FUEL SYSTEM:** Bosch electronic injection, ride-by-wire throttle bodies having a diameter of 53 mm; 20-litre fuel tank capacity.

**DRIVE:** primary drive with spur gears, ratio 1.84; chain final drive, ratio 2.86 (rear sprocket 43, front sprocket 15). 6-speed gearbox, ratios: 2.466 first gear, 1.764 second gear, 1.4 third gear, 1.181 fourth gear, 1.043 fifth gear, 0.958 sixth gear.

**CLUTCH:** multiplate slipper wet clutch.

**FRAME:** steel-tube trellis, aluminium side plates and load-bearing engine. Steering head angle 25°; trail 106 mm.

**SUSPENSIONS:** front fork with 48 mm stems, fully adjustable, 170 mm travel; rear shock absorber, completely adjustable with 170 mm wheel travel.

**WHEELS:** aluminium rims, front 3.0”x19”, rear 4.5” x17”; Pirelli Scorpion Trail II tyres, 120/70 - 170/60.

**BRAKES:** front double 320 mm floating disc, Brembo 4-piston monobloc radial callipers; rear 265 mm disc with Brembo 2-piston floating calliper. Bosch Cornering ABS.

**SIZE (IN MM) AND WEIGHT:** length 2,280, wheelbase 1,594, width 1,000, maximum height (1,483-1,511), handlebar height 1,177, seat height 840, footpeg height 364, minimum ground clearance 188; weight in running order 227 kg.

**COLOURS:** one, Ducati red with Glossy Black wheel rims.

**PRICE:** 14,740 turnkey



# INSIDE THE ENGINE

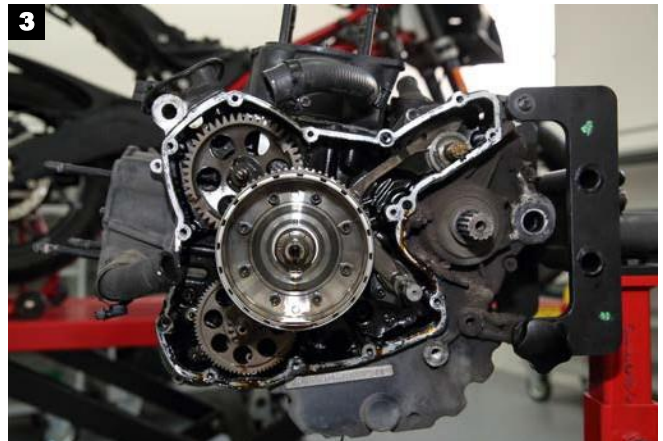
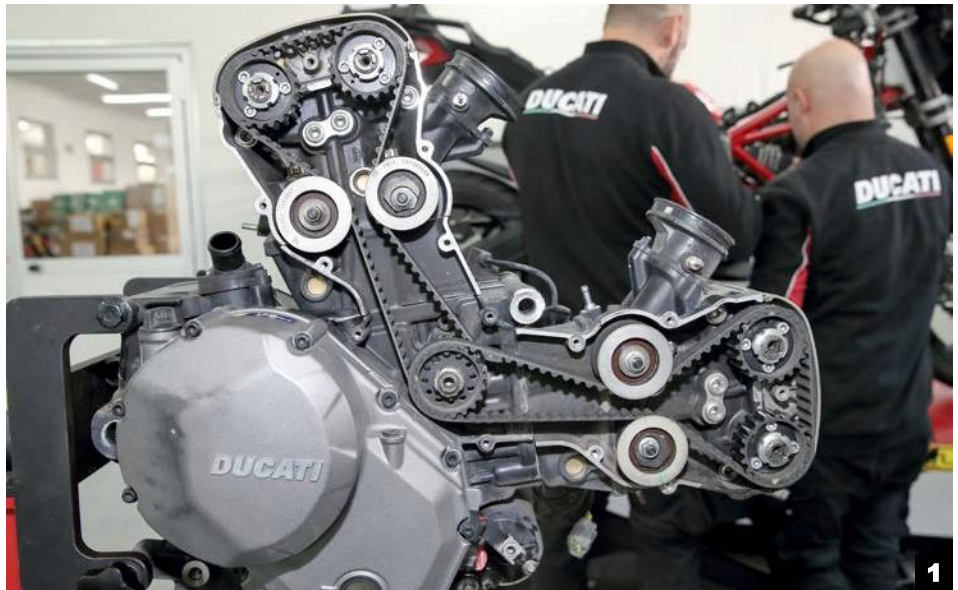


Without a doubt, the engine of our Multistrada is the one in best shape among those taken apart during the previous Long Tests. All the internal parts were found in top shape, with minimum wear. A confirmation of this good mechanical health is the power and maximum torque record values recorded at the end of our test

**SOON AND EFFICIENTLY**

Above, Leo Serafino, a Ducati Service technician, removing the radiator. This facility, led by Francesco Penazzo, is located in the Bologna factory. Besides being a "school" for professional training and updating of dealer technicians, the Service manages the relationships with Ducati customers.

"Our" Multistrada was rapidly reduced to a heap of parts: within one hour the engine was "free". **1.** The twin-cylinder engine is also the load-bearing feature for the front frame. The plastic cover of the timing belts is composed by three parts to facilitate belt inspection and replacement. **2 and 3.** Below is what we saw once the clutch cover (left) and generator cover were taken off. We did not find any residues or sediments in the crankcase.







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**ALMOST NO RESIDUE**

1, 2, 3 and 4. Here's how cylinder heads and pistons looked like. Truly minimal traces of fuel combustion, especially in the vertical cylinder. The reduced traces of carbon residues stems from the relentless research focused on combustion chambers and piston ring profiles, including tolerances

between the piston and the cylinder as well as the valve guide material. All this was confirmed also by a virtually non-existent lubricant consumption, which was never topped up between one service and the other.

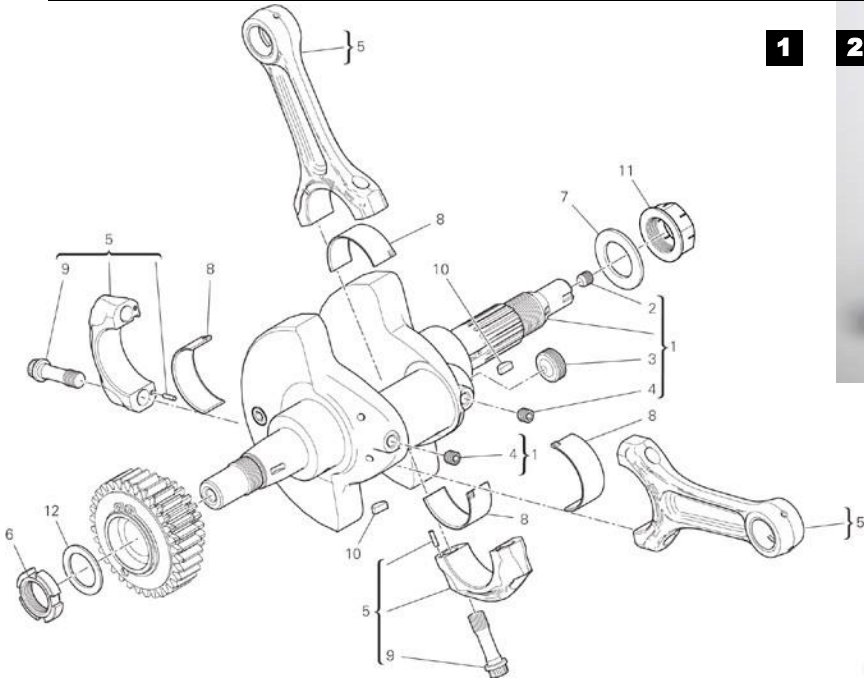
**HARMLESS SCRATCHES**

5. This is the inside of the vertical cylinder, which only features a few minor scratches that did not affect the performance. Indeed, this engine gave its best in terms of power and maximum torque right after 50,000 km. 6. The conditions of the valves showing traces of unburnt fuel were also within normal ranges.



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# INSIDE THE ENGINE



**BUILT TO LAST**

**1 and 2.** Design and real-life picture of the Testastretta connecting rod assy. And the machined areas on the crank webs to balance it. In this case, there is nothing to report, other than the fact that these parts are absolutely in top form. **3 and 4.** The plain bearings ("shells") of the connecting rods and crankshaft were in tip top shape given the miles it ran.

**5.** Measuring the plain bearings carried out under our supervision by technician Roberto Colombarini from the engine development department.



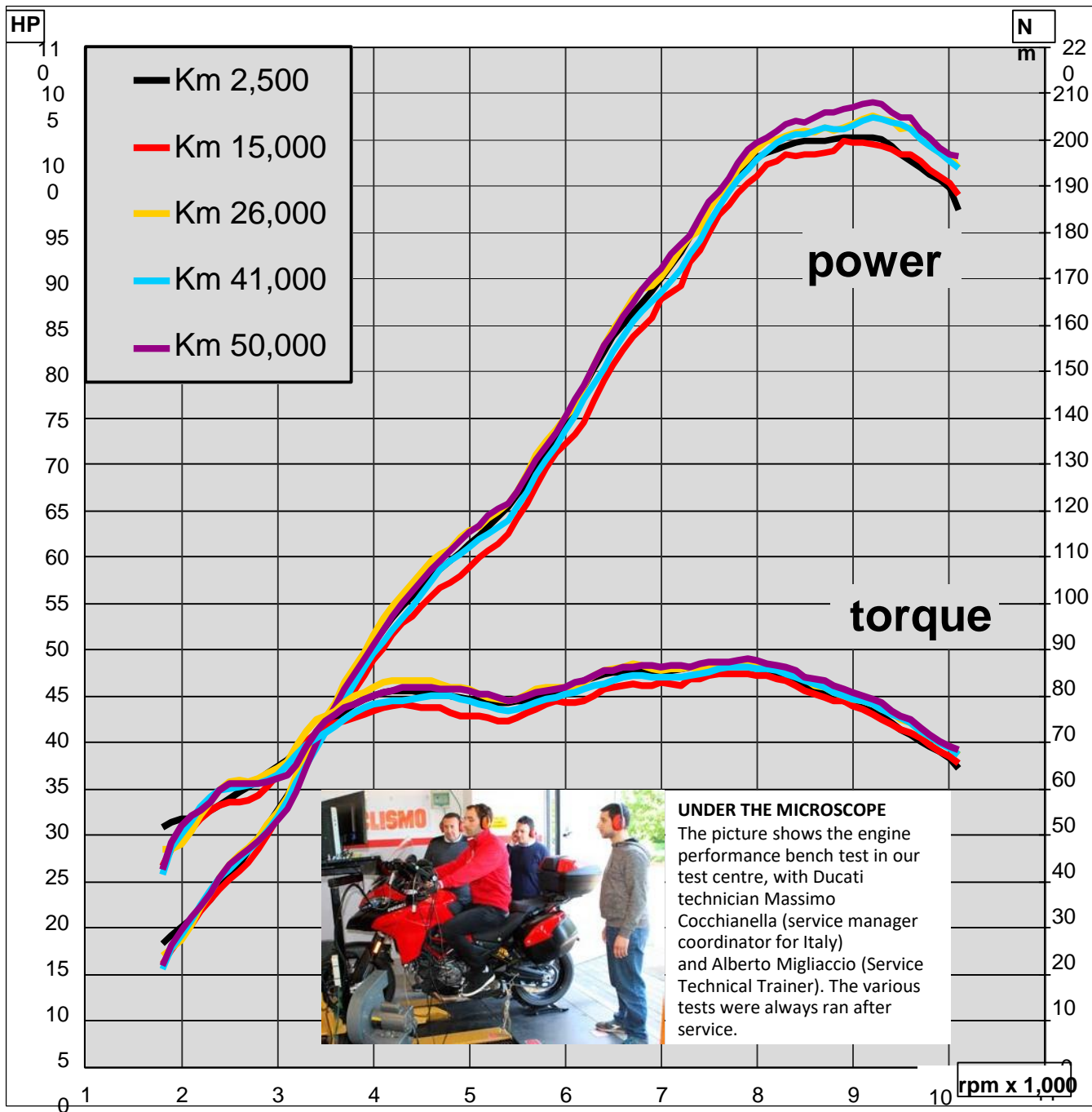
**6 STURDY CLUTCH**

**6.** The gearbox assembly was in mint condition both in terms of the gears and the minimal selector fork wear.

**7 and 8.** The clutch was in good shape with minimum plate wear, while the housing and inner hub were in perfect condition: this is the first time, with all the engines we analysed after our Long Tests, that we do not find any traces of wear or even grooves that prevent the clutch plates from sliding properly.







### DYNO BENCH TEST COMPARISON

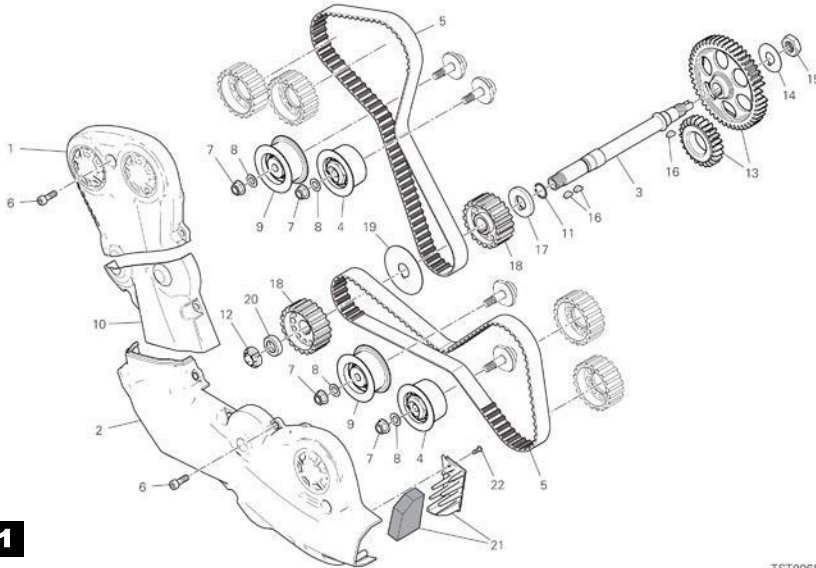
### ENGINE PERFORMANCE: SAVING THE BEST FOR LAST

RPM	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000
Power - HP at 2,500 km	15.20	27.64	45.63	56.40	69.45	84.92	97.98	100.16	94.82
Power - HP at 15,000 km	13.97	26.81	43.79	53.90	67.12	82.75	96.09	99.63	95.38
Power - HP at 26,000 km	13.71	27.46	46.57	57.87	69.97	85.18	98.97	101.68	98.21
Power - HP at 41,000 km	14.25	26.94	44.50	56.08	68.52	83.58	97.92	101.57	97.76
Power - HP at 50,000 km	14.84	26.49	45.56	57.72	70.01	86.05	99.71	103.49	98.47

*The twin-cylinder engine progressively increased its power and climaxed at 50,000 km, a sign of an engine that was in top shape also at the end of the test.*



# INSIDE THE ENGINE



## THE ENGINEER'S DESMO

1. Camshafts are driven by toothed belts (another idea by Taglioni, introduced in 1979 for the Pantah 500 engine). They are quieter than other control devices such as chains or gears. They were replaced at the second service coupon.

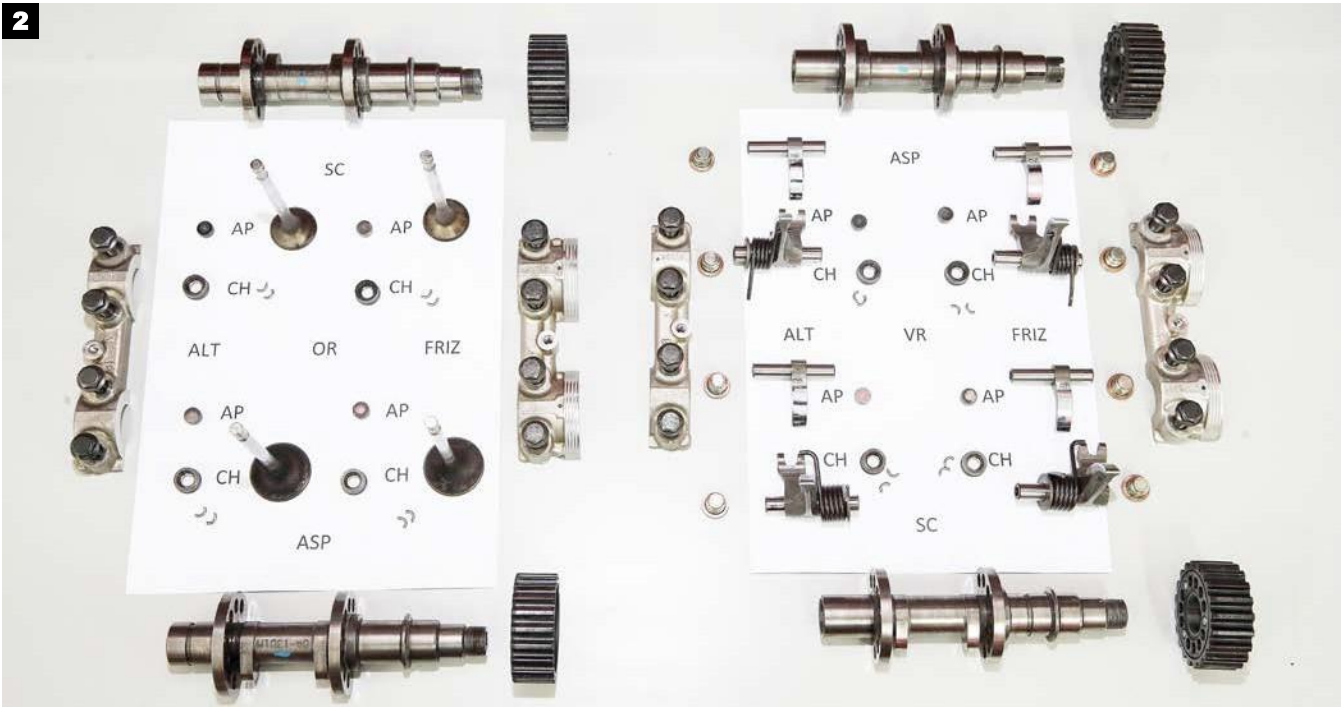
2. This is Ducati's heart: desmodromic timing system developed by engineer Fabio Taglioni and adopted for the first time on 1956 125 GP. The 4-valve control comes from a project by engineer Bordini in 1987

3. Our Riccardi (left) and engineer Vincenzo De Silvio, new head of Research & Development. For 31 years at Ducati, previously in the racing department, he is the mind behind 1098 and Multistrada engines.

4 and 5. The rational use of space with the camshafts visibly displayed. At the scheduled check all the operating plays were clockwork. These two tiny steel split rings lock the valves in place.

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# LUBRICANT

Very few red marks were seen in the lubricant sampled at every service and analysed by Mecoil lab in Florence. During the first part of the trip the metal (iron and aluminium) content was close to the limit, which is compatible with the running-in period. During following tests the oil showed halved levels of metals and fell back into normal ranges.



## NO TOP UPS

1. The trochoid pump (found in top conditions) and its plastic gear driven by the crankshaft. 2. Lubricant sampling for Mecoil lab. We have not reached the minimum amount of oil during our 50,000 km. In all the other Long Tests, with the exception of the one with Yamaha Tracer 900, we had to top up the lubricant periodically. Below is a summary sheet of lubricant sample results. The decrease in viscosity is compatible with the high mileage endured between oil changes.

## OIL CHECK-UP

### ALL GOOD, ALMOST

	Threshold values	15,000	26,000	41,000	50,000	
METALS DUE TO WEAR	Iron ppm	60	74	37	31	35
	Chromium ppm	3	1	<1	<1	<1
	Nickel ppm	3	2	<1	<1	3
	Manganese ppm	3	<1	<1	<1	<1
	Aluminium ppm	60	58	49	38	27
	Lead ppm	10	4	<1	2	2
	Copper ppm	15	7	4	3	2
	Tin ppm	5	<1	<1	<1	<1
	Silver ppm	3	<1	<1	<1	<1
	Titanium ppm	4	<1	<1	<1	<1
CONTAMINANTS	Silicon ppm	40	45	18	27	20
	Sodium ppm	15	8	7	8	7
	Potassium ppm	5	3	1	<1	2
	Vanadium ppm	3	<1	<1	<1	<1
ADDITIVES	Calcium ppm		1,936	2,224	2,258	2,054
	Magnesium ppm		8	10	11	6
	Phosphor ppm		687	698	830	713
	Zinc ppm		818	928	949	797
	Barium ppm		<5	<5	<5	<5
	Boron ppm		39	46	45	64
CHEMICAL PARAMETERS	Molybdenum ppm		113	140	153	122
	Oxidisation Abs/cm		13.7	13.8	14	12.6
	Nitration Abs/cm		8.8	9.4	10	10
	Sulphation Abs/cm		17.6	17.2	17.5	16.5
	Glycol %	0.1	<0.1	<0.1	<0.1	<0.1
VISCOSITY	Water %	0.2	<0.1	0.1	<0.1	0.2
	Viscosity at 40°C cSt	112-152	86.4	92.6	90.3	84.8
	Volatile combustible %	6	3.7	4.2	4.7	5.7



# TYRES

Pirelli Scorpion Trail II tyres are featured as original equipment on Multistrada. It showed great performance on dry terrain and proved its high safety features under low grip conditions



**15,000 KM ON THEIR SHOULDERS. A NOT SHOWING IT**  
Above, 3 tyre sets changed at 15,000, 26,000 and 41,000 km. The fourth was still on the motorbike; with this set we drove the remaining 9,000 km left to reach our 50,000 km goal.

**1 and 2.** The profile of Scorpion Trail II, new and after 15,000 km: as you see, they have a tendency to wear off on the outer side, though we never had any problems in terms of grip or stability, even at this high mileage.

**3.** Tyre assembly was performed directly by Ducati Service. As a Ducati part, the price of a set is 357 Euro, which includes the cost of fitting them onto the rims.

## WEAR AND MILEAGE

### LONG-LASTING, WINNING TYRES

(progressive km on the tachometer)	first set (15,000 km)			second set (26,000 km)		third set (41,000 km)		fourth set (50,000 km)	
	tread thickness on the new tyre	tread thickness after 15,000 km	mileage run for every mm worn	tread thickness after 11,000 km	mileage run for every mm worn	tread thickness after 15,000 km	mileage run for every mm worn	tread thickness after 9,000 km	mileage run for every mm worn
Front	4.3 mm	2.8 mm	10,000 km	3.1 mm	9,166 km	2.8 mm	10,000 km	3.4 mm	10,000 km
Rear	8.5 mm	1.3 mm	2,083 km	4.4 mm	2,682 km	2.8 mm	2,631 km	4.4 mm	2,195 km

The table above shows the mileage run with every set of tyres provided: two sets of tyres made it to the 15,000 km limit, the other two to 11,000 and 9,000 km; their different performance was determined not so much by excessive wear, but by an early service (at 26,000 km) and the end of the test at 50,000 km. Remember that Pirelli Scorpion Trail II tyres won our comparative review (published in *Motociclismo* 10-2018) focused on crossover category tyres.

# BRAKES

The set of rear brake pads was a bit “soft”, a “theft-proof” disc and two pistons that pushed too much. Nevertheless, the effectiveness of combined braking was always ensured by the very performing Brembo-Bosch combo.



### TOO MUCH PRESSURE ON THE RIGHT

**1.** We changed the rear brake pads at 20,000 km, way before the front ones, which were replaced at 26,000 km. With the second set of rear brake pads we made it to the end of our 50,000 km trip with almost twice as much friction material. This mileage is absolutely within normal range: in other Long Tests the wear was way higher, as in the case of BMW RT, which lasted only 10,000 km. **2 and 3.** On our Multistrada we had to change the right front disc at 21,500 km because the hub connection flange bent because of an attempted theft. The disc lock did its part and the Multistrada was saved; even though the light alloy flange causing the disc to float did not break, it took quite a hit and was damaged. **4.** A higher wear in the outer brake pad is worth mentioning, as compared with the inner brake pad, in the front right calliper. This had no connection with the attempted theft, because this issue came out since the beginning of the test. Most probably this is due to the pistons on that side of the radial calliper: they do not run immediately back into their housing as the brake lever is released on the handlebar and keep pressing (though slightly so) on the brake pad.

# FINAL DRIVE

Two chains to run 50,000 km are a normal performance in our Long Tests, though both chains could have covered a longer distance.



### TWO FOR THE WHOLE TRIP

**1 and 2.** At 26,000 km we replaced the original final drive. It was a precautionary measure given the unknowns of a long journey across Europe. Actually, the time was not right to change the chain (DID 525 HV3), even though two or three links were beginning to show some signs of seizing; as concerns stretch, we were well within the limits. **3.** Front and rear sprocket conditions were good. The second final drive kit, also a Ducati genuine part, made it to the end of the test (24,000 km) and was still “in shape” then. With an instrument we monitored chain efficiency in terms of stretch and we measured a residual “life” close to 80%. As a spare part, the chain, front and rear sprocket set costs 232 Euro.



# AGEING SIGNS



▲ The bolts, the various steel or light alloy components showed no signs of oxidation. With the exception of the right crankcase, at the clutch cover area, which was worn due to the contact with the boot, the bodywork, engine and frame paint was in top shape

▼ A certain hesitation at idling (only at the end of the test), a lock that comes off and the footpeg rubber covers that came off.



## POTENTIAL IMPROVEMENTS

If the Multistrada engine did not fail us as far as use and - as we explained in the previous pages - health conditions go, a few exceptions to the more than satisfactory Long Test of this versatile bike from the Borgo Panigale brand came from the clutch cover paint (1) that came off quite rapidly because of the contact with my right boot, and the footpeg rubber covers (2) which are press-fitted onto the footpegs and come off quite soon: we lost four of those. The side plastic panniers are easy to fit and remove, and absolutely waterproof, though at the end of the test the lock came off (3) from the left pannier.

Towards the end of our test the engine occasionally showed a few hesitations while riding in the city at low rpm: a small carbon residue on the outer circumference of the throttle valves in one of the throttle bodies (4) prevented the valve from closing properly. No issues were recorded any more when opening more the throttle control.

## MOTORBIKE AND COMPONENT WEAR THE FINAL LINE

	2,500 KM	15,000 KM	26,000 KM	41,000 KM	50,000 KM
Maximum power HP-rpm at the wheel	100.28 – 9,200	99.95 – 8,900	102.60 – 9,200	102.37 – 9,200	104.05 – 9,200
Maximum torque Nm-rpm at the wheel	86.98 – 7,750	84.97 – 7,750	87.25 – 7,750	86.22 – 7,800	88.01 – 7,900
Front right calliper brake pad wear (int.-ext. side)	0.3 mm – 0.7 mm	1.3 mm – 1.8 mm	1.5 mm – 1.9 mm	0.8 mm – 1.1 mm	1.7 mm – 2.4 mm
Front left calliper brake pad wear (int.-ext. side)	0.4 mm – 0.4 mm	1.3 mm – 1.3 mm	1.6 mm – 1.8 mm	0.9 mm – 0.8 mm	2.1 mm – 1.8 mm
Rear brake pad wear (int. -ext. side)	0.2 mm – 0.6 mm	1.7 mm – 2.0 mm	0.8 mm – 0.6 mm	0.3 mm – 0.7 mm	1.5 mm – 1.8 mm
Front disc wear, right - left	0 mm - 0 mm	0.2 mm - 0.2 mm	0.2 mm – 0.2 mm	0.2 mm – 0.3 mm	0.2 mm – 0.3 mm
Rear disc wear	0 mm	0.2 mm	0.2 mm	0.3 mm	0.4 mm
Engine oil top-up	No	No	No	No	No
Coolant top-up	No	No	No	No	No
Brake fluid top-up	No	No	No	No	No
Drive chain adjustment	No	Yes, at 4th notch	Yes, at 4th notch	Yes, at 4th notch	No

**GENERAL COSTS: 8,446 EURO - COST PER KM: 0.17 EURO**

**Service coupons:** 1,457 Euro, of which 730 for labour (average cost of 63.4 Euro/hour) and 727 Euro for the parts.

**Fuel:** 4,053 Euro (average consumption 18.5 km/l, 2,702 litres at 1.5 Euro per litre, average price estimated in Italy).

**Tyres:** 1,072 Euro at Ducati price for 3 sets of Pirelli Scorpion Trail II.

**Spare parts:** brake pads 360 Euro (front set and 2 rear sets), final drive kit 295 Euro (including 1 hour of labour), front right brake disc 268 Euro, footpeg covers 14 Euro, cooling radiator with fans 927 Euro.



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### ONE HOLE TOO MANY AND A CLEAN HEART

5. At 39,483 km the cooling radiator got punctured; an object, probably a rock shot out by the front wheel, opened a hole in one of the tubes where the fluid flows. Fortunately the hole was quite small (with minimum fluid loss), and we were not far from the next scheduled stop. It was subsequently replaced by Ducati technicians. 6. The "heart shaped" exhaust system is almost hidden to the sight taking up the rear space behind the engine. The front exhaust manifold, the one exposed to the elements, showed surface oxidisation, though less than in other previous Long Tests, specifically those involving Honda Africa Twin, Kawasaki Versys 650 and Yamaha Tracer 900. The silencer coating also withstood the test.

## ALL SERVICES

1,000 KM



15,000 KM



26,000 KM



41,000 KM



### SUPER SERVICE

All maintenance operations were provided directly by Ducati Service in the company and performed by company technicians, attentively followed by our people from the test centre as well as the journalists from *Motociclismo*. This was a good opportunity to appreciate the painstaking care for improving the quality of the motorbikes made in Borgo Panigale. Moving the frequency of the services to 15,000 km (now coupled with a 4-year and unlimited mileage warranty for the Multistrada family) is certainly a sign that the company is absolutely confident about this product. The cost of Multistrada servicing was 1,457 Euro, which includes 11.5 hours of labour, 13,6 litres of lubricant, 4 oil filters, 1 air filter, two timing belts, two spark plugs, 2,4 litres of coolant, 1.38 litres of fork fluid. The most expensive service was at 30,000 km (which we advanced to 26,000 km for logistical reasons; as a consequence the 45,000 km service, too, was performed earlier at 41,000 km in order to comply with the 15,000 km limit) where, besides changing the oil and the oil filter, the valve clearance must be also checked, together with engine oil inner filter cleaning, timing belt replacement and new spark plugs and air filter installation.