

Chapter 1

Historical background

All the Ducati models featured in this book owe their existence to the great engineer Fabio Taglioni. Without Taglioni, it's unlikely that Ducati would be where it is today as a motorcycle manufacturer, and its current success has been built very much on the achievements of the 1970s. When Taglioni joined Ducati from Mondial in 1954, the motorcycle production program centred around the small capacity Cucciolo. These motorcycles and mopeds were ideal for basic transportation, but were very limited in any other way. Taglioni wanted to build racing and sporting motorcycles, and had an extraordinarily creative and fertile engineering mind. The success of Taglioni's designs led to the success of Ducati as a company, and the early history of Ducati as a motorcycle producer is also the story of Taglioni's involvement. So prolific was he that not every design may have been excellent, but the best were unequalled. And Fabio Taglioni considered his best design over a forty-year association with the company was the bevel-drive V-twin. Not only is that engine a truly magnificent design, but its success contributed to Fabio Taglioni's reputation as one of the all time great motorcycle engineers.



Ducati's great engineer Fabio Taglioni was responsible for all the significant models until 1985. Here he is, towards the end of 1970, with an early 750 prototype.

Before World War II, Ducati had no association with motorcycles. Spurred on by the Italian fascist dictator Benito Mussolini's propaganda policy that promoted the universal ownership of radios, the Società Scientifica Radio Brevetti Ducati was one of Italy's pre-war industrial success stories. With a new factory in Bologna, the prosperous company manufactured and developed radios, electronic equipment, cameras and cash registers. All that changed when the Borgo Panigale plant was commandeered by the Germans

in September 1943 after the Italian government armistice with the Allies. There was further disaster for Ducati in October 1944 when the factory was almost destroyed by Allied bombing. However, if it hadn't been for the war, Ducati may never have become a motorcycle manufacturer.

The three Ducati brothers – Adriano, Bruno, and Marcello – who had set up the company back in 1926, faced many difficulties after the war. While still manufacturing radios and cameras, they diversified, and, by 1946, the Borgo Panigale plant was producing 48cc Cucciolo (or puppy) engines that could be easily installed in a bicycle frame. It proved to be a very opportune time to produce such a motor. The Cucciolo was the perfect answer to the demand for cheap and economical transportation in post-war Italy. Despite the Cucciolo's success, though, the company was beset with financial difficulties, and, in 1948, control passed to a joint government and Vatican consortium.

With demand for the Cucciolo very strong, Ducati decided to expand its motorcycle production, moving from just engine manufacture to building complete motorcycles. A redesign of the Cucciolo in 1950, with pushrods

Chapter 2

750 GT

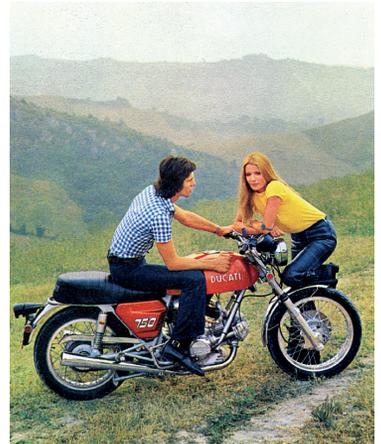
1971 ENGINE & FRAME NUMBER 750001-750100

The Imola 200 of 1972 may have been the turning point for Ducati, but production of the 750 GT, the bike on which the Imola racers was based, had started several months earlier. Beginning on a small scale in July 1971, according to Fabio Taglioni the first 500 bikes were considered pre-production, and the first 100 examples homologation specials. Until engine number 750404, the engine crankcases were sand-cast engine cases, with extra bolt mounts through the crankcase above the sump plug, initially on both sides, then later on the right or left side only. Originally intended for the mounting of the forward footpegs on the few 1970 prototypes, they served no useful purpose on the production GT. On all production bikes, the footrests were bolted to the frame, just behind the engine. The first 404 engines also had the through-bolt below the crankshaft positioned further away from the crank centre-line. They required a shorter gauze oil strainer (0755.88.125), but even by 1973 this part had ceased to be available. When the engines for the Imola bikes were taken off the production line in March 1972 they

had numbers in the 750390s. They did, however, have frame numbers around 751000. This discrepancy between engine and frame numbers was probably because the race department thought the first 404 sand-cast engine cases stronger than the later type because they had different internal webbing. It's difficult to ascertain the exact number of bikes built with all these unique features, but it was probably around 100, as specified on the homologation documents. Recent research has found 1971 production



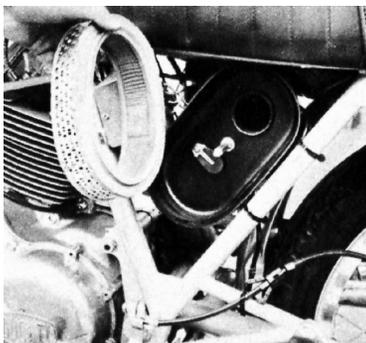
Ing Fabio Taglioni (right) was the architect behind the 750, but Fredmano Spairani (left) was the facilitator.



A factory publicity photo of the early 750, this version in metallflake red.

numbered 690, with the initial 100 probably produced in July, before the annual summer break. Further research indicates 82 750 GTs were produced for Italy, 33 for Australia, and 30 for the USA during 1971. Most of these were the regular production series (after engine number 750101). Yet even after the 750 GT went into regular production it was never really mass-produced. With a total number

DUCATI BEVEL TWINS 1971 TO 1986

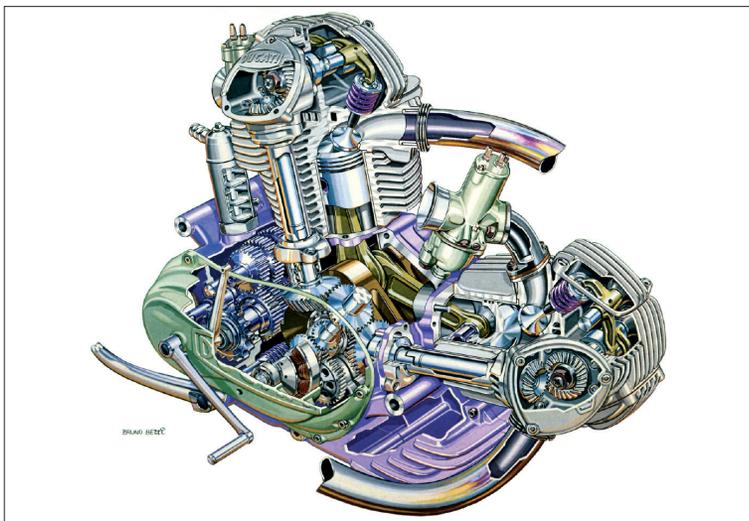


The engine breather valve exited into the rear air filter box.

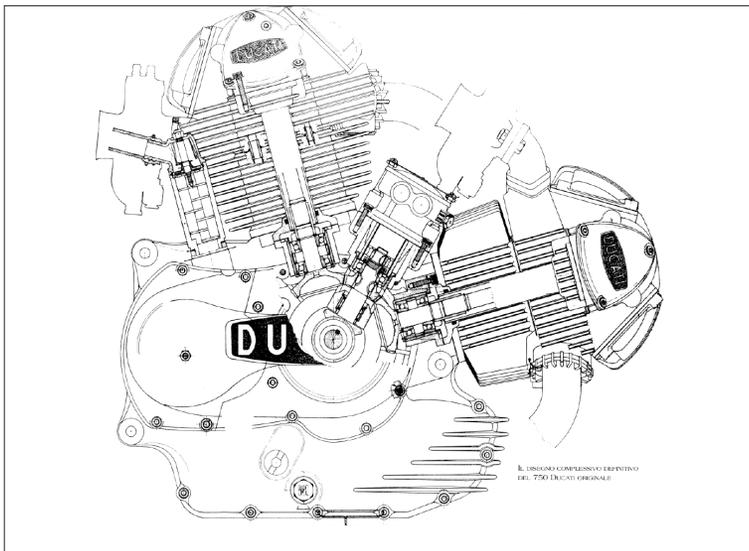
Engine

The engine number was always stamped on the left rear crankcase half, beginning at 750001. A DM750 was stamped on the right crankcase. 750 engines also included a pair of matching assembly numbers (between 001-999) between the cylinders, and an A or B stamped above the clutch cover to indicate A or B pistons and barrels. These early sand-cast crankcases not only had deep recesses but the casting from the kick-start shaft to the right rear lower engine mount was solid. The crankcase halves were also held together by only three 10mm bolts. The casting around the main bearings was also more substantial than on later production engines, as were the outward strengthening ribs. All Ducati engines came with a lead seal wired to two drilled Allen bolts underneath the crankcases, and the existence of this seal is the only way to positively identify whether an engine has been apart at any stage. The first few numbers identified prototype engines, and differed to the production versions in a number of details.

The camshaft bevel-gear drive of the first 750 engines was notable for an absence of timing marks, but this was soon rectified. All these engines though used the cast 'tulip' shaped lower bevel gears that were hollow underneath. They were more tapered on the top, and lighter than later bevel-gear sets but probably more expensive to manufacture as they were cast then machined. Both the early and later bevel gears carried the same part number (0755.29.800).



A cutaway of the 750 GT engine.



Above and opposite: 750 engine drawings.

The crankcase breather consisted of a plastic labyrinth and polished aluminium housing at the rear of the right crankcase half. A $\text{Ø}18 \times \text{Ø}24 \times 270\text{mm}$ black plastic tube ran to a flapper valve in the rear air filter box. The hose was supplied by Nava, and all bevel twin Ducatis featured this black plastic Nava breather hose, in varying lengths

for a particular application. The distinctive cast and polished outer engine covers included a clutch cover without an inspection plate, alternator cover with a shorter boss to accommodate the shorter kick-start shaft, and a floating tachometer drive (inherited from the singles) from the front cylinder head. Other engine differences included a different

DUCATI BEVEL TWINS 1971 TO 1986

engine number 753700 the 750 GT gained Dellorto PHF 30 AD and AS carburetors (D for Destra, and S for Sinistra, right and left). These new style carburetors featured accelerator pumps, and included polished aluminium float bowls (retained by 14mm nuts) and metal banjos. The intake manifolds were now aluminium,



With the Dellorto carburetors the regulator moved to a plate under the seat next to the fuse box.



The chrome Aprilia turn signal bodies on the early 750 GT had no markings.



The right Aprilia indicator switch mounted on a specific triangular plate.

the rear manifold identical to the front, angling the carburettor out towards the side cover. There was no longer any room for the regulator under the left-side cover, and this was mounted on a zinc-plated steel plate, with the fuse box in the plastic tool tray.



The plate pillars were hexagonal.



Dell-Orto PHF 30A carburetors were fitted towards the end of 1973, but the pleated plastic air intakes remained.



All 750 GTs had these rubber footpegs.

A new kick-start lever appeared at this time, the rotating pedal located by a ring and pin instead of the Seeger ring, but the shape was unchanged. As the supply of electronic tachometers dwindled, by the end of 1973 all the tachometers were mechanical, with a new drive from the front cylinder. Although the drive was now incorporated in the casting, it still failed to solve the problem of oil leaks, and sometimes oil would now leak from the cable connection. Some miles per hour Smiths instruments, with a mechanical tachometer (mainly for the UK and US), retained the earlier floating brass drive. The Smiths tachometer now also included an 8000rpm red line.



A new tachometer drive was fitted to the front cylinder head during 1973. This was for Veglia or Smiths instruments.



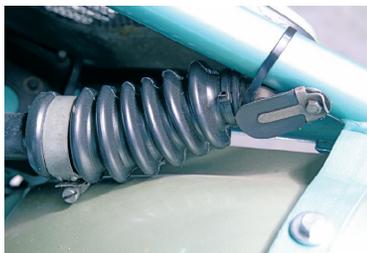
The Smiths tachometer now had a 7000rpm red line. The needle on this example is broken – a common problem with Smiths instruments.

The steel fuel tank and side covers (in the same colours) continued, but the left-side cover top mount was altered to provide room for the carburettor and air intake. Although it was not shown in the parts list, the side cover had a new part number (0795.91.785) and now incorporated two posts with rubber grommets, and a single lower straight post. Painted steel mudguards replaced the earlier Inox stainless steel type, the



Each 750 SS originally had a blue identifying paint mark on the front cylinder head. (Courtesy Claudio Scalise)

two degrees less than that for the 750 GT. The Super Sport ignition leads were black, not the green plastic-coated type of the 1973 750 SS, but with the same KLG plug caps. All 1974 Super Sports had the higher domed rocker covers that were designed for the 860 with its screw and lock nut valve adjustment.



The crankcase breather for the 750 SS (and some 1974 750 Sports), included a bellows and flapper valve.

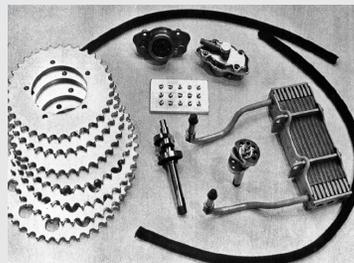
The crankcase breather system was quite different to the earlier 750 Sport, incorporating a plastic bellows located under the seat. The complete breather carried the part number 0797.91.050, and was attached to the right rear frame tube with a black plastic cable tie. Crankcase ventilation was more of a problem with the Super Sport than other 750s, and later 900s, exacerbated by broken piston rings if over-revved. Some owners ran the breather tube behind the seat along the rear mudguard, but a tidier solution was to incorporate a plastic ventilated catch tank with the bellows under the seat.

The rest of the engine shared the specifications of the 750 GT and Sport of early 1974. The clutch and five-speed, six-dog gearbox were identical, as were all the helical camshaft gears (with flat lower facings). Ignition

RACING UPGRATING KIT FOR THE SUPER SPORT (1974)

In January 1974, a comprehensive racing uprating kit became available for those wishing to production race the 750 Super Sport. This was offered as a complete kit to special order, and included the following parts:

Description	Part number
Vertical camshaft	0765.29.013
Horizontal camshaft	0765.29.023
Main jet #150 (x2)	0615.27.762
Main jet #155 (x2)	0615.27.764
Main jet #158 (x2)	0765.27.758
Main jet #160 (x2)	0615.27.766
Main jet #162 (x2)	0765.27.762
Main jet #165 (x2)	0615.27.768
Main jet #168 (x2)	0765.27.768
Main jet #170 (x2)	0615.27.770
Right megaphone	0765.88.045
Left megaphone	0765.88.050
Exhaust connecting pipe	0765.88.055
2 x exhaust connecting bolts	0765.88.060
Sprocket Z=34	0795.80.234
Sprocket Z=35	0795.80.235
Sprocket Z=37	0795.80.237
Sprocket Z=38	0795.80.238
Sprocket Z=39	0795.80.239
Sprocket Z=40	0795.80.240
Sprocket Z=41	0795.80.241
Sprocket Z=42	0795.80.242
Oil radiator	0765.88.040
Oil radiator mounting	0765.88.035
Radiator screw M8x100	0687.91.050
Radiator screw nut	0400.92.330
Oil pipe	0765.88.125
Oil pipe	0765.88.130
Oil pipe	0765.88.135
Oil pipe	0765.88.140
Clamps (x8)	0765.88.095
Screw (x2)	0400.92.020
Gasket (x4)	0400.92.010



A racing uprating kit was available for the 750 SS.

Oil pipe union (x2)	0765.88.115
T pipe oil union	0765.88.120
Straight pipe union	0755.88.850
Bearing cap (x2)	0765.88.110
Bearing cap gasket	0150.92.270
Sparkplug (x2)	0765.88.090
Condenser (x2)	0765.88.065
Renold racing chain	0797.88.100
Racing fairing	0797.88.060
Fairing screw (x4)	0795.91.755
Fairing Nyloc nut (x4)	0056.91.050
Gasket	0022.49.010
Fairing support (x2)	0797.03.640
Frame connector (x2)	0797.88.185
Left crankcase connector	0797.88.195
Right crankcase connector	0797.88.190
Fairing screw (x4)	0767.85.010
Fairing attachment	0797.88.200
Plexiglass	0797.03.780
Stop spring nut (x2)	0691.59.020

points, condensers, coils, 150-watt alternator, and voltage regulator were all as for the other 750s. The entire exhaust system, headers, balance pipe, and Conti mufflers with 'M' clamps, was shared with the other 750s. Undoubtedly, the factory spent the money earmarked for the Super Sport on careful assembly and special internal engine components.

Frame and cycle parts

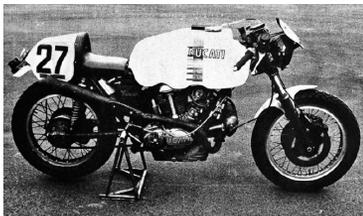
Constructed of AQ45 steel by Verlicchi, the 750 SS frame dimensions were ostensibly identical to the 750 Sport, and the later 1975 Super Sport frames

that also used the same series of frame numbers. The quoted swingarm length was 440mm, and width 210mm. The diameter of the top tube was 35mm, with 30mm side and rear tubes. The front downtubes were 26.7mm and the steering head 58mm. However, while the Super Sport frame may have looked superficially similar to the 750 Sport, the high-rise race kit megaphone balance pipe is about 25mm too short to fit the 750 Sport with megaphones. Unlike the 750 GT and Sport that had the frame number on the steering head, the Super Sport with its steering head-mounted fairing

Chapter 6

750 & 900 Super Sport (square-case)

The seeds for the creation of the 900 Super Sport had been sown as early as June 1973, when Fabio Taglioni prepared an 860 version of the 750 Super Sport for the Barcelona 24 Hour race at Montjuich Park. While not as high profile an event as the Imola 200, this was still a very significant victory for Ducati. Salvador Canellas and Benjamin Grau won at the record speed of 114.3kph (71mph), beating the second place Bultaco by 16 laps. This 860 Super Sport used early 750 (pre-engine number 75404), sand-cast, round-case crankcases, had a dry clutch, Scarab front brakes, and a Lockheed rear disc. The 860cc capacity was obtained simply by boring the motor to accept 86mm racing 450 pistons. The following year,



The 1973 Montjuich 860 racer was based on the round-case 750.

Taglioni again prepared an 860 Super Sport for Barcelona. This time Canellas and Grau retired with a failed gearbox after 16 hours while leading. In the meantime, at the Milan Show of 1973, both the new 860 GT and 750 Super Sport had been displayed. It seemed now that a production 860 Super Sport was inevitable at some stage, but still some time away.

Early 1974 saw the production of the one series of 750 Super Sports, and by the end of the year the new 860 GT had superseded the 750 GT. With the departure of the 750 Sport and desmo singles there was now no longer a sporting Ducati in the line-up but there was still demand for it, particularly for Italian and Australian production racing. Ducati was also



Grau (with Canellas) repeated his 1973 victory at Montjuich in 1975.