

## **FIAT ABARTH 131 -WORKS GROUP FOUR ALTERATIONS**

### **BODYWORK**

#### **All Cars**

- Fully seam welded, gusseted and plated tub including:
  - Doubled lower front cross member
  - Plated front chassis legs
  - Plated & strengthened suspension mounting points
- Bodyshell adapted for integral spots in air dam
- No underseal
- Interiors painted satin black
- Strut brace across engine bay to specially fitted turret mounts
- Twin Strut braces forward from specially fitted turret mounts to top of top front cross member
- Full roll cage
- Laminated Screen
- Screen corner plates
- Perspex door Windows
- Perspex quarter lights with Fitted Mirrors
- Perspex rear three quarter Windows
- Perspex rear screen
- Rear screen retaining plates
- Lightweight bonnet (lighter layup with reduced inner frame) bonnet pins, and aluminium strut.
- Cutaway hinges
- Lightweight boot lid (lighter layup with reduced inner frame) rubber hold downs. Aluminium strut
- Lightweight air dam (cutaway for spots) and rear valence (reduced thickness)
- Aluminium door skins
- Aluminium alloy sump guard (front valence drilled with three holes for quick release)

#### **Forest Versions (RAC etc.)**

- Lightweight wing mouldings with standard width (narrow) wheel arches
- Turret extensions - front and rear (from 10/77)
- Front Brake ducts blanked off or removed
- Rear Brake ducts blanked off or removed

#### **"Hybrid" Versions (Portugal. San Remo etc.)**

- Lightweight wing mouldings with wide (100mm) wheel arches
- Turret extensions - front and rear (from 10/77)
- Front Brake ducting usually in place, but may be blanked off
- Rear Brake ducting usually in place, but may be blanked off

#### **Tarmac Lightweight Versions (Monte Carlo. Corsica etc.)**

- Lightweight wing mouldings with wide (100mm) wheel arches
- No turret extensions (Short Travel suspension)
- Full brake ducting (front & rear)
- Lighter carbon reinforced body panels (from 1979 on?)
- Lightweight Front Suspension components (reported fitted to TOV 33681 in 79)
- Main Tub left in brown primer - (From 1980 on?)
- Alternative Magnesium Clutch Bell housing on lightweight Tarmac cars (from 1979?)

#### **Safari Versions**

- Lightweight wing mouldings with standard width (narrow) wheel arches
- Turret extensions (front and rear)
- Extra shell reinforcement, including...
  - doubled sill sections
  - often extra struts in boot space
  - Sill mounted Lifting/Towing loops
- Brake ducting usually in place, but may be blanked off
- Mounting for two spare wheels in space behind seats.

#### **Other Variations/Upgrades**

- Alternative removable interior air ventilation covers on scuttle. Modified firewall (from 10/76)
- Various types of strut brace for Carburetted version and Injected version (homologated 1/78, but probably fitted from inception)
- Series 2 type bodyshell - Square Rear Lights (from 7/78)

## **LIGHTING**

### Original Spec

- Small (5.75") twin front headlights
- Standard Front indicators in air dam
- Small rectangular indicator repeaters on front wing over arches
- Extra 7" Carello Spots integral into Air Dam

### Later Front Modifications (first type)

- Larger 7" Carello spots replace inner small headlights
- Outer small headlights retained but giving main and dip
- Grill altered accordingly
- Small round indicator repeaters mounted forward on front wing

### Later Front Modifications (second type)

- Additional free standing Carello 7" spots on air dam outboard of integral spots
- Indicators replaced with small round (Altissimo) type

Altered (square type) rear lights (series 2 cars - from 7/78)

## **BRAKES - Front**

- 300mmx20mm vented discs
- 10mm Wheel Spacers
- Cooling ducts to discs on some cars (see Bodywork)
- Forged Aluminium alloy ATE two pot calipers (Porsche 911 RS type) (from 4/1976)
- Alternative Lockheed 4 pot alloy Calipers (from 7/76 - Abarth part #. 7024095/6)
- Alternative Girling 4 pot alloy Calipers (from 7/76- Abarth part # 7024097/8)
- (Query - some reports talk of Alternative 274mm x 20mm Vented discs for Forest work)

## **BRAKES - Rear**

- 252mm x 20mm vented discs
- 10mm Wheel Spacers
- Cooling ducts to discs on some cars (see Bodywork)
- Forged Aluminium Alloy ATE two pot calipers (from 4/1976)
- Abarth small drum type mechanical handbrake assembly (in bell of rear disc) - (from 4/1976)
- Alternative separate mechanical handbrake caliper (from 7/76- Abarth Part # 7024136)
- Separate Brembo hydraulic Handbrake calipers (from 7/76 - Abarth part # 7024099)
- Modified Handbrake lever (square tubing type) for hydraulic handbrake (from 7/76)
- Alternative 2 pot Caliper (from 8/77)
- Alternative Hydraulic Handbrake lever - uses standard handbrake lever instead of fabrication (from 5/78)
- In line hydraulic handbrake (from 10/81) - Modified Handbrake lever assembly **to suit (square section** fabricated lever, with extra reinforced mount for master cylinder)

## **BRAKES - General**

- All brake lines internal
- All brake hoses armoured
- No brake servo
- Twin Master cylinders with separate reservoirs on bulkhead
- Brake bias adjuster (first homologated 1/79 due to regulation change - probably fitted earlier)

## **STEERING**

- Quick ratio steering rack (2.85 turns lock to lock)
- Steering damper
- Front hub carriers with shortened and strengthened drop arm.
- Strengthened track control rods (from 10/76)
- Alternative even quicker racks available later (from 1979?)

## **SUSPENSION – Front**

### All Cars

- Strengthened front cross member
- Two main types of spring/strut combinations are listed
  - Both have reinforced strut casings with fully adjustable Spring pans
  - Both have up rated springs (36% flexibility)
  - Both have up rated Bilstein dampers
  - Variations are colour coded as "black" and "blue"
- Front hub carriers with shortened and strengthened drop arm.
- Heavy duty (uprated 22mm) adjustable anti roll bar with Rose jointed anti roll bar drop links
- Rubber sheet protection for lower mounts

### Variations/Upgrades

- Special spherical joint top mounts for struts (from 10/76)
- Rose jointed lower front suspension arms with spherical joint for drag link (from 10/76)
- Further Reinforced front Hub carriers - with brake caliper mounting strengthened and moved closer to axle centre line (from 10/76)
- Forged steel front hubs (from 1/77 - Abarth part no 7023393)
- Further Reinforced front Hub Carrier (from 8/77)
- Alternative design Lower Front suspension arms and drag link (Vertical bolt mounting to arm rather than horizontal spherical joint through arm) (from 10/77)
- Strengthened drag links for alternative type front suspension - one piece rear section, with single rose joint front mount (from 5/78)
- Progressive Springs listed for Africa (from 1979?)
- Rebound straps fitted to front struts (from 4/80)
- Reinforced Front Strut assemblies - both long & short travel (from 7/80)

## **SUSPENSION - Rear**

### All Cars

- Two main types of spring/strut combinations are listed
  - Both have reinforced strut casings with fully adjustable Spring pans
  - Both have up rated springs (40% flexibility)
  - Both have up rated Bilstein dampers
  - Variations are colour coded as "black" and "blue"
- Adjustable Anti Roll bar with rose jointed drop links
- Rubber sheet protection for lower mounts Variations/Upgrades
- Special spherical joint top mounts for struts (from 10/76)
- Rose jointed rear lower wishbones (from 10/76)
- Rose jointed rear tie rods (from 10/76)
- Reinforced rear Hub Carrier (from 8/77)
- Modified rear lower wishbones with protection for outer ball joint (from 10/78)
- Progressive Springs listed for Africa (from 1979?)
- Rebound straps fitted to rear struts (from 7/79)
- Alternative extra reinforced Rear Hub Carrier - long mounting for strut (from 4/80 - Abarth part # 7028752)
- Reinforced Rear Strut assemblies - both long & short travel (from 7/80)
- Further Reinforced Rear wishbone assemblies - extra plating around spherical joint mounts (from 1/81)

## **REAR AXLE**

### All cars

- Abarth/ZF Limited Slip Diff
- Alternative Diff Ratios
- Uprated (Strengthened) Output Shafts
- Uprated (Strengthened) Drive Shafts
- Reinforced Diff Mounting Crossmember
- Uprated Diff mounting dampers

### Variations/Upgrades

- Rubber underbody protection for drive shaft joints (on gravel/rough events)
- Diff Skid plate replaces Alloy Sump (from 7/76)
- Magnesium Diff casing
- Strengthened Limited Slip Diff Assembly - requires modified casing? (from 1979?)
- Further Strengthened Diff Mounting Crossmember with three round holes rather than triangular lightening openings (from 1/81 )

## **LIGHTING / ELECTRICS**

### All cars

- Altered loom
- Glassfibre protective covers over cabling in cockpit
- Belt driven high load alternator (12v, 1000W)
- High Speed Windscreen Wiper Motor (80 bpm)
- Heavy Duty Starter Motor
- Twin Electric Fuel Pumps in boot
- Battery in boot
- Modified Dash
- Two way radio

### Variations/Upgrades

- Strengthened alternator mount (for rough stages)
- Alternative pantograph type Windscreen Wiper arm on drivers side with high flow washers.
- Twin Battery system in boot - second battery for night work (from 1/79)
- Alternative Second version Dash - with 5 Dials only (from 10/79)

## **INTERIOR**

### All cars

- Glassfibre protective covers over cabling in cockpit
- Modified Dash
- Modified dash cover
- Modified door covers
- Abarth Seats  
(Co-drivers seat has no head rest to allow quick access to spare wheels carried behind seats)
- No Carpets
- Drilled Alloy Throttle pedal face plate
- Modified Gearbox tunnel cover (from 7/76)
- Haldas on RHS of dash
- Twin stop watches in casing to Left of Haldas
- Dash mounted Fuses and relays
- Lucas map light
- Fire extinguisher in mounting behind co driver
- Drivers Alloy footrest to left of clutch pedal
- Co drivers alloy footrest

### Variations/Upgrades

- Safari cars had mounting for two spare wheels in space behind seats
- Alternative Second version Dash - with 5 Dials only (from 10/79)
- Halda Rally Computer replaces mechanical trip (from 1981 ?)

## **WHEELS & TYRES**

### All cars

- 10mm alloy wheel spacers
- Steel wheel studs with rolled threads (instead of bolt type fixing)

### Tarmac

- Early cars 9J(?) x 15 one piece Magnesium wheels (Campagnolo ??)
- Later cars
  - Front Dry 10J x 15 Abarth Cromadora Two piece Magnesium wheels  
250/40 x 15 Pirelli P7 Corsa Slicks
  - Rear Dry 11J x 15 Abarth Cromadora Two piece Magnesium wheels  
295/35 x 15 Pirelli P7 Corsa Slicks
  - Front Wet 8J x 15 Abarth Cromadora Two piece Magnesium wheels  
225/45 x 15 Pirelli P7 Corsa Hand Cut Slicks
  - Rear Wet 10J x 15 Abarth Cromadora Two piece Magnesium wheels  
250/40 x 15 Pirelli P7 Corsa Hand Cut Slicks

### Forest

7" x 15" one piece Cromadora one piece Magnesium wheels  
185/70 VR15 Pirelli M&S 35

### Safari

- Front 5" x 15" one piece Cromadora one piece Magnesium wheels
- Rear 7" x 15" one piece Cromadora one piece Magnesium wheels

### Ice

(5"?) x 15" Abarth Cromadora two piece Magnesium wheels

## **GEARBOX / TRANSMISSION**

- Early cars reportedly used straight cut close ration dog engagement gearboxes with Colotti manufactured internals in possibly two types
- Type 209 - Built up layshaft giving optional ratios - Overdrive top
- Possibly Type 247 - reportedly with built up layshaft giving optional ratios - Direct drive top
- Another variation is straight cut close ratio dog engagement gearbox with built up layshaft, direct drive top, of unknown manufacture
- Later cars used straight cut close ratio dog engagement gearboxes with CIMA manufactured internals - At least three known variations:
  - Direct Drive Top (Abarth Type 168)
  - 0.802 Overdrive Top (Abarth Type 163) 0.876 Overdrive Top (Abarth Type 164)
  - (Abarth type 165 is also listed but spec unknown at this time - unless this is same as 168)
- CIMA gearboxes used different gearchange mechanism requiring modified glassfibre gearbox tunnel cover (homologated ,in 7/76)
- Alternative Gearbox tail Units (homologated from 7/76)
- All cars had alloy protection housing for Propshaft coupling
- All cars used competition clutch assembly with sintered clutch plates
- Alternative Magnesium Clutch Bell housing on lightweight Tarmac cars (from 10/80)

## **ENGINE**

### **Early Wet Sump Carburettor version**

As Standard but:

- Abarth Block
  - All inner surfaces fettled smooth
  - Parallel decked & surfaced
  - Parallel bored & plateau honed
- Forged Steel rods, centred, lightened, balanced and shot peened
- Crank balanced, tufrided & nitrided - modified oilways with key holed journals.
- Lightened & balanced flywheel (7.3kg) Dowelled on crank
- Forged pistons
- 10.7 to 1 Compression Ratio
- High lift and duration cams
- Vernier Cam followers
- Larger Valves (35.5mm Inlet, 30mm Exhaust) (34.5/28.5 are also listed)
- Modified cylinder head
  - Balanced combustion chambers
  - Gas flowed ports
  - Three angle valve seats
  - Modified oil galleries
  - Modified water galleries
  - Dowelled to block
- Heavy duty head gasket
- Twin 48 IDF carbs
- Steel "Big Wing" internally baffled wet sump
- Heavy Duty oil pump with shortened pickup
- Modified Jackshaft
- Smaller Jackshaft drive wheel
- Remote mounted oil filter
- Toothed belt driven Water Pump and Alternator
- Alloy Reinforcement housings for engine mounts

### **Early Injected version - 215bhp at 7000rpm. 225nm at 5600rpm**

- Kugelfischer Pump driven by toothed belt off crank - mounted on plate to LHS Of engine
- Butterfly throttle assembly, with injectors mounted in separate trumpets

### **Early Dry Sump Injected version - 230bhp at 7500rpm, 225nm at 5750 (available from 7/77}**

- 11 to 1 Compression Ratio
- Magnesium Dry Sump pan
- Two stage Dry Sump pump (separate from Filter unit)
- 15 litre tank in boot
- Oil filler on exhaust cam box cover lockwired shut.

### **Later Upgrades**

- Lighter flywheel - 7.3kg (from 1/77)
- Alternative Stronger Crank - 43lbs not 36lbs (from 4/77)
- Slide throttle Injection system replaces Butterfly throttle system (From 77 - introduced at San Remo)
- Transistorised Ignition pack replaces Mechanical advance distributor (from ???)  
Ignition pack on Left front inner wing
- Modified Unit Construction Dry Sump Pump assembly replaces separate unit (from 7/78)
- Alternative Injection manifold available with injectors mounted in one piece airbox  
(for dusty conditions)
- Tarmac engine version with higher lift and duration cams, higher Compression ratio (11.5 to 1) 235bhp (from 1979?)
- No oil filler on exhaust cam box cover on later engines (#302)
- Alternative smaller (8kg) dry sump tank in left rear of boot space (from 10/80)

### Exhaust

- Four into two into one manifold
- Twin pipe assembly under floor
- Alternative unsilenced exhaust exiting at side (for racing only)
- Quick release connections (from 1979?)
- Specially cast flanges for mounting exhaust to head (from 1979?)

### Fuel System

- Aluminium Fuel tank with internal Bag – 60 Litres
- Large exterior fuel Tank Filler recessed into cutaway boot lid  
(first homologated 1/79 due to regulation change - fitted from earliest cars)  
Filler in RH "C" pillar blanked off
- Twin electric fuel pumps in boot
- Fuel swirl pot in boot
- Fuel lines through cockpit

### Oil System

- Early cars
    - "Big Wing" internally baffled wet sump pan
    - Increased capacity oil pump with shortened pick up
    - Smaller Jackshaft belt drive wheel
    - Oil Cooler (to Left of Radiator)
    - Remote Oil Filter assembly
    - Modified oil breather
    - Oil breather catch tank on LH front inner wing
  - Variations/Upgrades
    - Dry Sump Kit including
      - Magnesium Dry Sump
      - Dry Sump pump
      - 15 litre dry Sump tank in boot
    - Modified Unit Construction Dry Sump Pump assembly replaces separate unit (from 7/78)
- Integral oil filter
- Oil breather catch tank moved to RH front inner wing (at same time as Transistorised Injection pack fitted to LH front inner wing)
  - Alternative 8kg dry sump tank in left rear of boot space (from 10/80)

### Cooling

- Toothed Belt driven Water pump Oil System
  - Modified thermostat
  - Expansion Tank on RH front inner wing

### Ignition

#### Early Cars

- Breakerless Mechanical Advance Distributor
- Upgraded Coil on Rear of RH inner front wing

#### Later cars

- Breakerless Fixed Advance Distributor
- Transistorised Ignition pack on LH inner front wing