

## FEV - Engine Design Database

- Engine data collection in Microsoft Excel®
- Easy data analysis and processing
- Consideration of general engine data as well as specification of particular components and systems  
(Data structure shown on back side)
- Based on continuous inquiry of literature:
  - MTZ (Technical magazine)
  - Aachen-Colloquium
  - Vienna Motor Symposium
- Content
  - Current series production engines  
(Database is permanently being updated)
- Representation
  - Overall data:  
Comparison of similar engines/components supported by Microsoft Excel® - filter function  
(Overall data shown back side)
  - Single data:  
One selected engine in a separate print layout
  - Print presentation:  
Overview of the most important basic data of all engines



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|  |                                       |   |  |                                   |
|--|---------------------------------------|---|--|-----------------------------------|
| <b>100 basic data</b>                        | <b>300 conrod</b>                     | <b>700 camshaft</b>                       | <b>1200 crankcase</b>                      | <b>1900 intake system</b>         |
| 101 kinematics                               | 301 conrod shaping                    | 701 camshaft position                     | 1201 crankcase type                        | 1901 intake system shaping        |
| 102 operating method                         | 302 conrod material                   | 702 number of camshafts                   | 1202 crankcase material                    | 1902 intake system material       |
| 103 total displacement                       | 303 conrod type                       | 703 camshaft shaping                      | 1203 crankcase shaping / casting technique | 1903 intake manifold dimensions   |
| 104 displacement per cylinder                | 304 conrod weight                     | 704 camshaft material                     | 1204 block height                          | 1904 remarks                      |
| 105 number of cylinders                      | 305 conrod length                     | 705 camshaft suspension                   | 1205 block length                          |                                   |
| 106 number of valves                         | 306 stroke-to-conrod ratio $r/l$      | 706 camshaft lubrication                  | 1206 distance between cylinders            | <b>2000 exhaust system</b>        |
| 107 cylinder arrangement                     | 307 conrod width                      | 707 valve I/R I/E                         | 1207 land width                            | 2001 exhaust system type          |
| 108 distance between cylinders               | 308 bearing shell                     | 708 valve timing                          | 1208 crankcase land cooling                | 2002 exhaust system material      |
| 109 stroke                                   | 309 remarks                           | 709 phasing I/E [°a]                      | 1209 water jacket height                   | 2003 exhaust pipe                 |
| 110 bore                                     |                                       | 710 driving device                        | 1210 crankcase weight                      | 2004 supercharging                |
| 111 stroke/bore ratio                        | <b>400 piston</b>                     | 711 driving device dimensions             | 1211 remarks                               | 2005 catalyst                     |
| 112 compression (nominal)                    | 401 piston material                   | 712 tensioner                             |  | 2006 EGPI-sytem                   |
| 113 mean effective pressure (max.)           | 402 piston type                       | 713 remarks                               | <b>1300 oil pan</b>                        | 2007 remarks                      |
| 114 ignition pressure (max.)                 | 403 piston cooling / lubrication      | 714 weight                                | 1301 oil pan shaping                       |                                   |
| 115 max. power output                        | 404 total height                      |   | 1302 oil pan material                      | <b>2100 lubrication / cooling</b> |
| 116 engine speed @ max. power                | 405 piston skirt length               | <b>800 valve drive components</b>         | 1303 remarks                               | 2101 content oil / water          |
| 117 max. engine torque                       | 406 compression height                | 801 transmission component type           |  | 2102 remarks                      |
| 118 engine speed @ max. engine torque        | 407 top land height                   | 802 valve-clearance compensation          | <b>1400 oil pump</b>                       |                                   |
| 119 specific power output                    | 408 ring land height                  | 803 remarks                               | 1401 oil pump type                         | <b>2200 ventilation</b>           |
| 120 specific engine torque                   | 409 piston weight                     |   | 1402 oil pump driving device               | 2201 remarks                      |
| 121 weight-to-output ratio                   | 410 piston rings                      | <b>900 valve springs</b>                  | 1403 remarks                               |                                   |
| 122 engine weight                            | 411 piston pin length                 | 901 valve spring type I/E                 | <b>1500 accessories</b>                    | <b>2300 consumption</b>           |
| 123 emission limit value                     | 412 piston pin outer/inner diameter   | 902 dimensions id / od / installed length | 1501 remarks                               | 2301 specific consumption         |
| 124 idle speed                               | 413 piston pin weight                 | 903 remarks                               | <b>1600 mixture formation</b>              | 2302 consumption DIN              |
| 125 max. permanent speed                     | 414 remarks                           |   | 1601 injection system                      | <b>2400 noise reduction</b>       |
| 126 average piston speed @ max. power outp   | <b>500 flywheel</b>                   | <b>1000 cylinder liner</b>                | 1602 injection system dimensions           | 2401 noise reduction              |
| 127 engine width                             | 501 flywheel type                     | 1001 cylinder liner type                  | 1603 fuel distribution                     | 2402 remarks                      |
| 128 engine length                            | 502 moment of inertia                 | 1002 cylinder liner material              | 1604 injector                              |                                   |
| 129 engine height                            | 503 remarks                           | 1003 remarks                              | 1605 remarks                               | <b>3000 administration</b>        |
| 130 mass balance                             | 504 weight                            | <b>1100 cylinder head</b>                 | <b>1700 ignition</b>                       | 3001 engine designation           |
| 131 remarks                                  | 505 starter transmission ratio        | 1101 cylinder head material               | 1701 ignition system                       | 3002 data source                  |
|  |                                       | 1102 cylinder head type                   | 1702 remarks                               | 3003 last processing              |
| <b>200 crankshaft</b>                        | <b>600 valves</b>                     | 1103 combustion chamber                   | <b>1800 engine management</b>              |                                   |
| 201 crankshaft shaping                       | 601 number of valves per cylinder I/E | 1104 valve angle                          | 1801 engine control type                   |                                   |
| 202 crankshaft material                      | 602 valve material I/E                | 1105 distance between valves              | 1802 remarks                               |                                   |
| 203 number of counterweights                 | 603 cooling I/E                       | 1106 cylinder head height                 |  |                                   |
| 204 suspension                               | 604 disk diameter I/E                 | 1107 cylinder head cooling                |  |                                   |
| 205 weight                                   | 605 stem diameter I/E                 | 1108 cylinder head cover                  |  |                                   |
| 206 main bearing diameter                    | 606 valve length I/E                  | 1109 remarks                              |  |                                   |
| 207 main bearing journal width               | 607 valve weight I/E                  | 1110 single weight                        |  |                                   |
| 208 conrod bearing diameter                  | 608 remarks                           |   |  |                                   |
| 209 conrod bearing journal width             |                                       |   |  |                                   |
| 210 crankshaft-overlapping ratio [(D+d) / S] |                                       |   |  |                                   |
| 211 crankshaft web thickness                 |                                       |   |  |                                   |
| 212 crankshaft web width                     |                                       |   |  |                                   |
| 213 crank radius                             |                                       |   |  |                                   |

## Data structure

|     | A   | L                     | M         | N                 | O                     | P                              | Q                        | R                        | S                         | T                  | U                                 | V                     |
|-----|---|-----------------------|-----------|-------------------|-----------------------|--------------------------------|--------------------------|--------------------------|---------------------------|--------------------|-----------------------------------|-----------------------|
| 1   |  | <b>100 basic data</b> |           |                   |                       |                                |                          |                          |                           |                    |                                   |                       |
| 2   | engine designation database   | stroke                | bore      | stroke/bore ratio | compression (nominal) | mean effective pressure (max.) | ignition pressure (max.) | max. engine power output | engine speed @ max. power | max. engine torque | engine speed @ max. engine torque | specific power output |
| 3   |   | 110                   | 111       | 112               | 113                   | 114                            | 115                      | 116                      | 117                       | 118                | 119                               | 120                   |
| 165 | Opel/2.0/100/5600   | 86.00 mm              | 86.00 mm  | 1.000             | 10.8                  | 11.82 bar                      |                          | 100.0 kW                 | 5600 rpm                  | 188.0 Nm           | 3200 rpm                          | 50.1 k                |
| 166 | Opel/2.0/140/5400   | 86.00 mm              | 86.00 mm  | 1.000             | 8.8                   | 15.70 bar                      |                          | 140.0 kW                 | 5400 rpm                  | 250.0 Nm           | 1950-5300 rpm                     | 70.1 k                |
| 167 | Opel/2.0/141/5400   | 86.00 mm              | 86.00 mm  | 1.000             | 8.8                   |                                |                          | 141.0 kW                 | 5400 rpm                  | 250.0 Nm           | 1950 rpm                          | 70.6 k                |
| 168 | Opel/2.2/085/4300 D   | 98.00 mm              | 84.00 mm  | 1.167             | 18.5                  | 15.05 bar                      |                          | 85.0 kW                  | 4300 rpm                  | 260.0 Nm           | 1900 rpm                          | 39.2 k                |
| 169 | Opel/2.2/092/4000 D   | 98.00 mm              | 84.00 mm  | 1.166             | 18.5                  |                                |                          | 92.0 kW                  | 4000 rpm                  | 280.0 Nm           | 1500-2750 rpm                     | 42.4 k                |
| 170 | Opel/2.2/106/5400   | 94.60 mm              | 86.00 mm  | 1.100             |                       |                                |                          | 106.0 kW                 | 5400 rpm                  | 205.0 Nm           | 4000 rpm                          | 48.2 k                |
| 171 | Opel/2.2/108/5800   | 94.60 mm              | 86.00 mm  | 1.100             | 10.0                  |                                |                          | 108.0 kW                 | 5800 rpm                  | 203.0 Nm           | 4000 rpm                          | 49.1 k                |
| 172 | Opel/2.2/114/5600   | 94.60 mm              | 86.00 mm  | 1.100             | 12.0                  |                                |                          | 114.0 kW                 | 5600 rpm                  | 220.0 Nm           | 3800 rpm                          | 51.9 k                |
| 173 | Opel/2.2/114/5600   | 94.60 mm              | 86.00 mm  | 1.100             | 12.0                  |                                |                          | 114.0 kW                 | 5600 rpm                  | 220.0 Nm           | 3800 rpm                          | 51.9 k                |
| 174 | Peugeot/1.1/044/5600  | 69.00 mm              | 72.00 mm  | 0.958             | 10.2                  |                                |                          | 44.0 kW                  | 5600 rpm                  | 91.0 Nm            | 2600 rpm                          | 39.1 k                |
| 175 | Peugeot/2.2/098/4000 D  | 96.00 mm              | 85.00 mm  | 1.129             | 18.0                  |                                |                          | 98.0 kW                  | 4000 rpm                  | 317.0 Nm           | 2000 rpm                          | 45.0 k                |
| 176 | Peugeot/2.2/098/4000 D FMA  | 96.00 mm              | 85.00 mm  | 1.130             | 18.0                  | 18.28 bar                      |                          | 98.0 kW                  | 4000 rpm                  | 317.0 Nm           | 2000 rpm                          | 45.0 k                |
| 177 | Peugeot/3.0/152/6000  | 82.60 mm              | 87.00 mm  | 0.949             | 10.9                  |                                |                          | 152.0 kW                 | 6000 rpm                  | 285.0 Nm           | 3750 rpm                          | 51.6 k                |
| 178 | Porsche/2.7/162/6400  | 78.00 mm              | 85.50 mm  | 0.912             | 11.0                  | 12.16 bar                      |                          | 162.0 kW                 | 6400 rpm                  | 260.0 Nm           | 4750 rpm                          | 60.3 k                |
| 179 | Porsche/3.2/185/6250  | 78.00 mm              | 93.00 mm  | 0.839             | 11.0                  | 12.06 bar                      |                          | 185.0 kW                 | 6250 rpm                  | 305.0 Nm           | 4500 rpm                          | 58.2 k                |
| 180 | Porsche/3.4/221/6800  | 78.00 mm              | 96.00 mm  | 0.813             | 11.3                  | 12.99 bar                      |                          | 221.0 kW                 | 6800 rpm                  | 350.0 Nm           | 4600 rpm                          | 65.2 k                |
| 181 | Porsche/3.6/265/7200  | 76.40 mm              | 100.00 mm | 0.764             | 11.7                  | 12.92 bar                      |                          | 265.0 kW                 | 7200 rpm                  | 370.0 Nm           | 5000 rpm                          | 73.6 k                |
| 182 | Porsche/3.6/309/6000  | 76.40 mm              | 100.00 mm | 0.764             | 9.4                   | 19.55 bar                      |                          | 309.0 kW                 | 6000 rpm                  | 560.0 Nm           | 2700 rpm                          | 85.8 k                |

## Overall data