

X92

External forces and moments

Rating R1 : 6450 kW/Cyl. / 80 rpm Standard Tier2 Tuning

| Engine Type | | 6X92 | 7X92 | 8X92 | 8X92 |
|---|--------|----------|----------|-----------|----------|
| Speed | | 80 rpm | 80 rpm | 80 rpm | 80 rpm |
| Power | | 38700 kW | 45150 kW | 51600 kW | 51600 kW |
| Firing order | | regular | regular | irregular | regular |
| Crankshaft type | | 1-part | 1-part | 1-part | 2-part |
| Massmoments / Forces | | | | | |
| Free Forces | | | | | |
| F1v | [±kN] | 0 | 0 | 2 | 21 |
| F1h | [±kN] | 0 | 0 | 1 | 53 |
| F2v | [±kN] | 0 | 0 | 6 | 0 |
| F4v | [±kN] | 0 | 0 | 46 | 0 |
| External Moments | | | | | |
| M1v | [±kNm] | 0 | 454 | 1187 | 952 |
| M1h | [±kNm] | 0 | 511 | 1194 | 376 |
| M2v *) | [±kNm] | 6696 | 1944 | 305 | 328 |
| M4v | [±kNm] | 465 | 1320 | 530 | 552 |
| Lateral H-Moments M_{LH} | | | | | |
| Ord.1 | [±kNm] | 0 | 0 | 1 | 0 |
| Ord.2 | [±kNm] | 0 | 0 | 1 | 0 |
| Ord.3 | [±kNm] | 0 | 0 | 42 | 0 |
| Ord.4 | [±kNm] | 0 | 0 | 550 | 0 |
| Ord.5 | [±kNm] | 0 | 0 | 229 | 0 |
| Ord.6 | [±kNm] | 3545 | 0 | 11 | 0 |
| Ord.7 | [±kNm] | 0 | 2879 | 19 | 0 |
| Ord.8 | [±kNm] | 0 | 0 | 2058 | 2082 |
| Ord.9 | [±kNm] | 0 | 0 | 9 | 0 |
| Ord.10 | [±kNm] | 0 | 0 | 2 | 0 |
| Ord.11 | [±kNm] | 0 | 0 | 28 | 0 |
| Ord.12 | [±kNm] | 163 | 0 | 44 | 0 |
| Lateral X-Moments M_{LX} | | | | | |
| Ord.1 | [±kNm] | 0 | 351 | 865 | 203 |
| Ord.2 | [±kNm] | 888 | 258 | 40 | 35 |
| Ord.3 | [±kNm] | 1160 | 1269 | 1615 | 1938 |
| Ord.4 | [±kNm] | 1459 | 4147 | 1666 | 1725 |
| Ord.5 | [±kNm] | 0 | 323 | 4064 | 4758 |
| Ord.6 | [±kNm] | 0 | 45 | 76 | 22 |
| Ord.7 | [±kNm] | 0 | 0 | 321 | 19 |
| Ord.8 | [±kNm] | 263 | 20 | 112 | 0 |
| Ord.9 | [±kNm] | 396 | 44 | 55 | 7 |
| Ord.10 | [±kNm] | 111 | 315 | 26 | 4 |
| Ord.11 | [±kNm] | 0 | 150 | 185 | 226 |
| Ord.12 | [±kNm] | 0 | 7 | 25 | 29 |
| Torque variation | [±kNm] | 3652 | 2955 | 2650 | 2139 |

* No engine fitted 2nd order balancer available. If reduction of M2v is needed, an external compensator has to be applied.

The values for other engine ratings are available on request

The resulting lateral guide force can be calculated as follows: FL=M_{LH} x 0.192 [kN]

X92

External forces and moments

Rating R1 : 6450 kW/Cyl. / 80 rpm Standard Tier2 Tuning

| Engine Type | | 9X92 | 10X92 | 11X92 | 12X92 |
|---|--------|---------------------|---------------------|---------------------|---------------------|
| Speed | | 80 rpm | 80 rpm | 80 rpm | 80 rpm |
| Power | | 58050 kW | 64500 kW | 70950 kW | 77400 kW |
| Crankshaft type | | irregular 2-part | irregular 2-part | irregular 2-part | irregular 2-part |
| Massmoments / Forces | | | | | |
| Free Forces | | | | | |
| F1v | [±kN] | 44 | 82 | 39 | 53 |
| F1h | [±kN] | 45 | 74 | 42 | 62 |
| F2v | [±kN] | 72 | 31 | 8 | 37 |
| F4v | [±kN] | 46 | 13 | 24 | 25 |
| External Moments | | | | | |
| M1v | [±kNm] | 817 | 136 | 235 | 1138 |
| M1h | [±kNm] | 817 | 185 | 216 | 1580 |
| M2v *) | [±kNm] | 2369 | 1558 | 2313 | 751 |
| M4v | [±kNm] | 710 | 746 | 308 | 1255 |
| Lateral H-Moments M_{LH} | | | | | |
| Ord.1 | [±kNm] | 73 | 167 | 105 | 128 |
| Ord.2 | [±kNm] | 9 | 2 | 3 | 5 |
| Ord.3 | [±kNm] | 30 | 19 | 153 | 56 |
| Ord.4 | [±kNm] | 548 | 149 | 275 | 300 |
| Ord.5 | [±kNm] | 656 | 242 | 1549 | 1461 |
| Ord.6 | [±kNm] | 137 | 122 | 1117 | 204 |
| Ord.7 | [±kNm] | 78 | 59 | 185 | 855 |
| Ord.8 | [±kNm] | 79 | 15 | 291 | 150 |
| Ord.9 | [±kNm] | 1390 | 90 | 67 | 53 |
| Ord.10 | [±kNm] | 20 | 1012 | 56 | 46 |
| Ord.11 | [±kNm] | 12 | 40 | 516 | 31 |
| Ord.12 | [±kNm] | 10 | 2 | 10 | 292 |
| Lateral X-Moments M_{LX} | | | | | |
| Ord.1 | [±kNm] | 590 | 135 | 136 | 919 |
| Ord.2 | [±kNm] | 318 | 211 | 311 | 103 |
| Ord.3 | [±kNm] | 2290 | 2868 | 3594 | 4005 |
| Ord.4 | [±kNm] | 2226 | 2327 | 960 | 3909 |
| Ord.5 | [±kNm] | 2001 | 323 | 1030 | 1374 |
| Ord.6 | [±kNm] | 3057 | 757 | 458 | 525 |
| Ord.7 | [±kNm] | 483 | 2852 | 333 | 560 |
| Ord.8 | [±kNm] | 173 | 210 | 1861 | 875 |
| Ord.9 | [±kNm] | 16 | 43 | 438 | 1275 |
| Ord.10 | [±kNm] | 84 | 13 | 48 | 311 |
| Ord.11 | [±kNm] | 24 | 15 | 130 | 108 |
| Ord.12 | [±kNm] | 113 | 7 | 32 | 21 |
| Torque variation | [±kNm] | 2279 | 1476 | 2732 | 2353 |

* No engine fitted 2nd order balancer available. If reduction of M2v is needed, an external compensator has to be applied.

The values for other engine ratings are available on request

The resulting lateral guide force can be calculated as follows: $FL = MLH \times 0.192$ [kN]

X92

External forces and moments

Rating R1 : 6450 kW/Cyl. / 80 rpm Delta Tier2 Tuning

| Engine Type | | 6X92 | 7X92 | 8X92 | 8X92 |
|---|--------|----------|----------|-----------|----------|
| Speed | | 80 rpm | 80 rpm | 80 rpm | 80 rpm |
| Power | | 38700 kW | 45150 kW | 51600 kW | 51600 kW |
| Firing order | | regular | regular | irregular | regular |
| Crankshaft type | | 1-part | 1-part | 1-part | 2-part |
| Massmoments / Forces | | | | | |
| Free Forces | | | | | |
| F1v | [±kN] | 0 | 0 | 2 | 21 |
| F1h | [±kN] | 0 | 0 | 1 | 53 |
| F2v | [±kN] | 0 | 0 | 6 | 0 |
| F4v | [±kN] | 0 | 0 | 46 | 0 |
| External Moments | | | | | |
| M1v | [±kNm] | 0 | 454 | 1187 | 952 |
| M1h | [±kNm] | 0 | 511 | 1194 | 376 |
| M2v *) | [±kNm] | 6696 | 1944 | 305 | 328 |
| M4v | [±kNm] | 465 | 1320 | 530 | 552 |
| Lateral H-Moments M_{LH} | | | | | |
| Ord.1 | [±kNm] | 0 | 0 | 1 | 0 |
| Ord.2 | [±kNm] | 0 | 0 | 1 | 0 |
| Ord.3 | [±kNm] | 0 | 0 | 44 | 0 |
| Ord.4 | [±kNm] | 0 | 0 | 539 | 0 |
| Ord.5 | [±kNm] | 0 | 0 | 225 | 0 |
| Ord.6 | [±kNm] | 3442 | 0 | 10 | 0 |
| Ord.7 | [±kNm] | 0 | 2782 | 19 | 0 |
| Ord.8 | [±kNm] | 0 | 0 | 1970 | 1993 |
| Ord.9 | [±kNm] | 0 | 0 | 9 | 0 |
| Ord.10 | [±kNm] | 0 | 0 | 2 | 0 |
| Ord.11 | [±kNm] | 0 | 0 | 25 | 0 |
| Ord.12 | [±kNm] | 138 | 0 | 37 | 0 |
| Lateral X-Moments M_{LX} | | | | | |
| Ord.1 | [±kNm] | 0 | 349 | 860 | 201 |
| Ord.2 | [±kNm] | 927 | 269 | 42 | 36 |
| Ord.3 | [±kNm] | 1240 | 1356 | 1727 | 2071 |
| Ord.4 | [±kNm] | 1437 | 4085 | 1641 | 1699 |
| Ord.5 | [±kNm] | 0 | 317 | 3981 | 4660 |
| Ord.6 | [±kNm] | 0 | 44 | 73 | 22 |
| Ord.7 | [±kNm] | 0 | 0 | 310 | 19 |
| Ord.8 | [±kNm] | 251 | 19 | 107 | 0 |
| Ord.9 | [±kNm] | 373 | 42 | 52 | 6 |
| Ord.10 | [±kNm] | 104 | 294 | 25 | 4 |
| Ord.11 | [±kNm] | 0 | 134 | 164 | 201 |
| Ord.12 | [±kNm] | 0 | 6 | 20 | 23 |
| Torque variation | [±kNm] | 3548 | 2860 | 2557 | 2053 |

* No engine fitted 2nd order balancer available. If reduction of M2v is needed, an external compensator has to be applied.

The values for other engine ratings are available on request

The resulting lateral guide force can be calculated as follows: $FL = MLH \times 0.192$ [kN]

X92

External forces and moments

Rating R1 : 6450 kW/Cyl. / 80 rpm Delta Tier2 Tuning

| Engine Type | | 9X92 | 10X92 | 11X92 | 12X92 |
|--|--------|---------------------|---------------------|---------------------|---------------------|
| Speed | | 80 rpm | 80 rpm | 80 rpm | 80 rpm |
| Power | | 58050 kW | 64500 kW | 70950 kW | 77400 kW |
| Crankshaft type | | irregular 2-part | irregular 2-part | irregular 2-part | irregular 2-part |
| Massmoments / Forces | | | | | |
| Free Forces | | | | | |
| F1v | [±kN] | 44 | 82 | 39 | 53 |
| F1h | [±kN] | 45 | 74 | 42 | 62 |
| F2v | [±kN] | 72 | 31 | 8 | 37 |
| F4v | [±kN] | 46 | 13 | 24 | 25 |
| External Moments | | | | | |
| M1v | [±kNm] | 817 | 136 | 235 | 1138 |
| M1h | [±kNm] | 817 | 185 | 216 | 1580 |
| M2v *) | [±kNm] | 2369 | 1558 | 2313 | 751 |
| M4v | [±kNm] | 710 | 746 | 308 | 1255 |
| Lateral H-Moments M_{LH} | | | | | |
| Ord.1 | [±kNm] | 73 | 166 | 104 | 127 |
| Ord.2 | [±kNm] | 7 | 2 | 3 | 4 |
| Ord.3 | [±kNm] | 31 | 19 | 158 | 58 |
| Ord.4 | [±kNm] | 537 | 146 | 269 | 294 |
| Ord.5 | [±kNm] | 643 | 237 | 1517 | 1431 |
| Ord.6 | [±kNm] | 134 | 119 | 1084 | 198 |
| Ord.7 | [±kNm] | 75 | 57 | 179 | 826 |
| Ord.8 | [±kNm] | 76 | 14 | 279 | 144 |
| Ord.9 | [±kNm] | 1313 | 85 | 63 | 51 |
| Ord.10 | [±kNm] | 19 | 943 | 52 | 43 |
| Ord.11 | [±kNm] | 11 | 36 | 462 | 28 |
| Ord.12 | [±kNm] | 8 | 1 | 8 | 247 |
| Lateral X-Moments M_{LX} | | | | | |
| Ord.1 | [±kNm] | 587 | 134 | 135 | 914 |
| Ord.2 | [±kNm] | 331 | 220 | 324 | 107 |
| Ord.3 | [±kNm] | 2447 | 3064 | 3840 | 4279 |
| Ord.4 | [±kNm] | 2193 | 2292 | 946 | 3851 |
| Ord.5 | [±kNm] | 1960 | 317 | 1009 | 1345 |
| Ord.6 | [±kNm] | 2962 | 733 | 443 | 509 |
| Ord.7 | [±kNm] | 467 | 2756 | 322 | 541 |
| Ord.8 | [±kNm] | 165 | 201 | 1777 | 836 |
| Ord.9 | [±kNm] | 15 | 41 | 412 | 1199 |
| Ord.10 | [±kNm] | 78 | 12 | 45 | 291 |
| Ord.11 | [±kNm] | 22 | 13 | 116 | 95 |
| Ord.12 | [±kNm] | 92 | 6 | 26 | 17 |
| Torque variation | [±kNm] | 2189 | 1400 | 2633 | 2265 |

* No engine fitted 2nd order balancer available. If reduction of M2v is needed, an external compensator has to be applied.

The values for other engine ratings are available on request

The resulting lateral guide force can be calculated as follows: $FL = MLH \times 0.192$ [kN]

X92

External forces and moments

Rating R1 : 6450 kW/Cyl. / 80 rpm LowLoad Tier2 Tuning

| Engine Type | | 6X92 | 7X92 | 8X92 | 8X92 |
|---|--------|----------|----------|-----------|----------|
| Speed | | 80 rpm | 80 rpm | 80 rpm | 80 rpm |
| Power | | 38700 kW | 45150 kW | 51600 kW | 51600 kW |
| Firing order | | regular | regular | irregular | regular |
| Crankshaft type | | 1-part | 1-part | 1-part | 2-part |
| Massmoments / Forces | | | | | |
| Free Forces | | | | | |
| F1v | [±kN] | 0 | 0 | 2 | 21 |
| F1h | [±kN] | 0 | 0 | 1 | 53 |
| F2v | [±kN] | 0 | 0 | 6 | 0 |
| F4v | [±kN] | 0 | 0 | 46 | 0 |
| External Moments | | | | | |
| M1v | [±kNm] | 0 | 454 | 1187 | 952 |
| M1h | [±kNm] | 0 | 511 | 1194 | 376 |
| M2v *) | [±kNm] | 6696 | 1944 | 305 | 328 |
| M4v | [±kNm] | 465 | 1320 | 530 | 552 |
| Lateral H-Moments M_{LH} | | | | | |
| Ord.1 | [±kNm] | 0 | 0 | 1 | 0 |
| Ord.2 | [±kNm] | 0 | 0 | 1 | 0 |
| Ord.3 | [±kNm] | 0 | 0 | 43 | 0 |
| Ord.4 | [±kNm] | 0 | 0 | 540 | 0 |
| Ord.5 | [±kNm] | 0 | 0 | 225 | 0 |
| Ord.6 | [±kNm] | 3450 | 0 | 10 | 0 |
| Ord.7 | [±kNm] | 0 | 2789 | 19 | 0 |
| Ord.8 | [±kNm] | 0 | 0 | 1980 | 2003 |
| Ord.9 | [±kNm] | 0 | 0 | 9 | 0 |
| Ord.10 | [±kNm] | 0 | 0 | 2 | 0 |
| Ord.11 | [±kNm] | 0 | 0 | 25 | 0 |
| Ord.12 | [±kNm] | 141 | 0 | 38 | 0 |
| Lateral X-Moments M_{LX} | | | | | |
| Ord.1 | [±kNm] | 0 | 349 | 860 | 202 |
| Ord.2 | [±kNm] | 925 | 269 | 42 | 36 |
| Ord.3 | [±kNm] | 1237 | 1353 | 1723 | 2066 |
| Ord.4 | [±kNm] | 1438 | 4088 | 1642 | 1700 |
| Ord.5 | [±kNm] | 0 | 317 | 3989 | 4669 |
| Ord.6 | [±kNm] | 0 | 44 | 73 | 22 |
| Ord.7 | [±kNm] | 0 | 0 | 310 | 19 |
| Ord.8 | [±kNm] | 253 | 20 | 108 | 0 |
| Ord.9 | [±kNm] | 374 | 42 | 52 | 6 |
| Ord.10 | [±kNm] | 104 | 296 | 25 | 4 |
| Ord.11 | [±kNm] | 0 | 137 | 169 | 206 |
| Ord.12 | [±kNm] | 0 | 6 | 21 | 24 |
| Torque variation | [±kNm] | 3557 | 2868 | 2568 | 2063 |

* No engine fitted 2nd order balancer available. If reduction of M2v is needed, an external compensator has to be applied.

The values for other engine ratings are available on request

The resulting lateral guide force can be calculated as follows: FL=M_{LH} x 0.192 [kN]

X92

External forces and moments

Rating R1 : 6450 kW/Cyl. / 80 rpm LowLoad Tier2 Tuning

| Engine Type | | 9X92 | 10X92 | 11X92 | 12X92 |
|--|--------|---------------------|---------------------|---------------------|---------------------|
| Speed | | 80 rpm | 80 rpm | 80 rpm | 80 rpm |
| Power | | 58050 kW | 64500 kW | 70950 kW | 77400 kW |
| Crankshaft type | | irregular 2-part | irregular 2-part | irregular 2-part | irregular 2-part |
| Massmoments / Forces | | | | | |
| Free Forces | | | | | |
| F1v | [±kN] | 44 | 82 | 39 | 53 |
| F1h | [±kN] | 45 | 74 | 42 | 62 |
| F2v | [±kN] | 72 | 31 | 8 | 37 |
| F4v | [±kN] | 46 | 13 | 24 | 25 |
| External Moments | | | | | |
| M1v | [±kNm] | 817 | 136 | 235 | 1138 |
| M1h | [±kNm] | 817 | 185 | 216 | 1580 |
| M2v *) | [±kNm] | 2369 | 1558 | 2313 | 751 |
| M4v | [±kNm] | 710 | 746 | 308 | 1255 |
| Lateral H-Moments M_{LH} | | | | | |
| Ord.1 | [±kNm] | 73 | 166 | 104 | 127 |
| Ord.2 | [±kNm] | 7 | 2 | 3 | 4 |
| Ord.3 | [±kNm] | 31 | 19 | 157 | 58 |
| Ord.4 | [±kNm] | 537 | 146 | 270 | 294 |
| Ord.5 | [±kNm] | 644 | 238 | 1519 | 1433 |
| Ord.6 | [±kNm] | 134 | 119 | 1087 | 199 |
| Ord.7 | [±kNm] | 75 | 57 | 179 | 828 |
| Ord.8 | [±kNm] | 76 | 15 | 280 | 145 |
| Ord.9 | [±kNm] | 1319 | 85 | 63 | 51 |
| Ord.10 | [±kNm] | 19 | 948 | 53 | 44 |
| Ord.11 | [±kNm] | 11 | 36 | 470 | 29 |
| Ord.12 | [±kNm] | 8 | 1 | 9 | 253 |
| Lateral X-Moments M_{LX} | | | | | |
| Ord.1 | [±kNm] | 587 | 134 | 135 | 914 |
| Ord.2 | [±kNm] | 331 | 219 | 324 | 107 |
| Ord.3 | [±kNm] | 2442 | 3058 | 3832 | 4270 |
| Ord.4 | [±kNm] | 2194 | 2294 | 947 | 3854 |
| Ord.5 | [±kNm] | 1964 | 317 | 1011 | 1348 |
| Ord.6 | [±kNm] | 2969 | 735 | 444 | 510 |
| Ord.7 | [±kNm] | 468 | 2761 | 323 | 542 |
| Ord.8 | [±kNm] | 167 | 202 | 1790 | 842 |
| Ord.9 | [±kNm] | 15 | 41 | 414 | 1203 |
| Ord.10 | [±kNm] | 78 | 12 | 46 | 292 |
| Ord.11 | [±kNm] | 22 | 13 | 119 | 98 |
| Ord.12 | [±kNm] | 94 | 6 | 27 | 18 |
| Torque variation | [±kNm] | 2196 | 1406 | 2644 | 2274 |

* No engine fitted 2nd order balancer available. If reduction of M2v is needed, an external compensator has to be applied.

The values for other engine ratings are available on request

The resulting lateral guide force can be calculated as follows: $FL = MLH \times 0.192$ [kN]

X92

External forces and moments

Rating R1 : 6450 kW/Cyl. / 80 rpm DeltaBypass Tier2 Tuning

| Engine Type | | 6X92 | 7X92 | 8X92 | 8X92 |
|--|--------|----------|----------|-----------|----------|
| Speed | | 80 rpm | 80 rpm | 80 rpm | 80 rpm |
| Power | | 38700 kW | 45150 kW | 51600 kW | 51600 kW |
| Firing order | | regular | regular | irregular | regular |
| Crankshaft type | | 1-part | 1-part | 1-part | 2-part |
| Massmoments / Forces | | | | | |
| Free Forces | | | | | |
| F1v | [±kN] | 0 | 0 | 2 | 21 |
| F1h | [±kN] | 0 | 0 | 1 | 53 |
| F2v | [±kN] | 0 | 0 | 6 | 0 |
| F4v | [±kN] | 0 | 0 | 46 | 0 |
| External Moments | | | | | |
| M1v | [±kNm] | 0 | 454 | 1187 | 952 |
| M1h | [±kNm] | 0 | 511 | 1194 | 376 |
| M2v *) | [±kNm] | 6696 | 1944 | 305 | 328 |
| M4v | [±kNm] | 465 | 1320 | 530 | 552 |
| Lateral H-Moments M_{LH} | | | | | |
| Ord.1 | [±kNm] | 0 | 0 | 1 | 0 |
| Ord.2 | [±kNm] | 0 | 0 | 1 | 0 |
| Ord.3 | [±kNm] | 0 | 0 | 43 | 0 |
| Ord.4 | [±kNm] | 0 | 0 | 542 | 0 |
| Ord.5 | [±kNm] | 0 | 0 | 226 | 0 |
| Ord.6 | [±kNm] | 3485 | 0 | 10 | 0 |
| Ord.7 | [±kNm] | 0 | 2828 | 19 | 0 |
| Ord.8 | [±kNm] | 0 | 0 | 2020 | 2044 |
| Ord.9 | [±kNm] | 0 | 0 | 9 | 0 |
| Ord.10 | [±kNm] | 0 | 0 | 2 | 0 |
| Ord.11 | [±kNm] | 0 | 0 | 27 | 0 |
| Ord.12 | [±kNm] | 159 | 0 | 43 | 0 |
| Lateral X-Moments M_{LX} | | | | | |
| Ord.1 | [±kNm] | 0 | 349 | 860 | 202 |
| Ord.2 | [±kNm] | 921 | 267 | 42 | 36 |
| Ord.3 | [±kNm] | 1209 | 1323 | 1685 | 2021 |
| Ord.4 | [±kNm] | 1445 | 4106 | 1650 | 1708 |
| Ord.5 | [±kNm] | 0 | 319 | 4010 | 4695 |
| Ord.6 | [±kNm] | 0 | 45 | 74 | 22 |
| Ord.7 | [±kNm] | 0 | 0 | 315 | 19 |
| Ord.8 | [±kNm] | 258 | 20 | 110 | 0 |
| Ord.9 | [±kNm] | 387 | 43 | 54 | 7 |
| Ord.10 | [±kNm] | 109 | 309 | 26 | 4 |
| Ord.11 | [±kNm] | 0 | 147 | 180 | 220 |
| Ord.12 | [±kNm] | 0 | 7 | 24 | 27 |
| Torque variation | [±kNm] | 3588 | 2901 | 2602 | 2098 |

* No engine fitted 2nd order balancer available. If reduction of M2v is needed, an external compensator has to be applied.

The values for other engine ratings are available on request

The resulting lateral guide force can be calculated as follows: $FL = MLH \times 0.192$ [kN]

X92

External forces and moments

Rating R1 : 6450 kW/Cyl. / 80 rpm DeltaBypass Tier2 Tuning

| Engine Type | | 9X92 | 10X92 | 11X92 | 12X92 |
|---|--------|---------------------|---------------------|---------------------|---------------------|
| Speed | | 80 rpm | 80 rpm | 80 rpm | 80 rpm |
| Power | | 58050 kW | 64500 kW | 70950 kW | 77400 kW |
| Crankshaft type | | irregular 2-part | irregular 2-part | irregular 2-part | irregular 2-part |
| Massmoments / Forces | | | | | |
| Free Forces | | | | | |
| F1v | [±kN] | 44 | 82 | 39 | 53 |
| F1h | [±kN] | 45 | 74 | 42 | 62 |
| F2v | [±kN] | 72 | 31 | 8 | 37 |
| F4v | [±kN] | 46 | 13 | 24 | 25 |
| External Moments | | | | | |
| M1v | [±kNm] | 817 | 136 | 235 | 1138 |
| M1h | [±kNm] | 817 | 185 | 216 | 1580 |
| M2v *) | [±kNm] | 2369 | 1558 | 2313 | 751 |
| M4v | [±kNm] | 710 | 746 | 308 | 1255 |
| Lateral H-Moments M_{LH} | | | | | |
| Ord.1 | [±kNm] | 73 | 166 | 104 | 127 |
| Ord.2 | [±kNm] | 7 | 2 | 3 | 5 |
| Ord.3 | [±kNm] | 30 | 19 | 154 | 57 |
| Ord.4 | [±kNm] | 540 | 147 | 271 | 296 |
| Ord.5 | [±kNm] | 648 | 239 | 1528 | 1442 |
| Ord.6 | [±kNm] | 135 | 120 | 1098 | 201 |
| Ord.7 | [±kNm] | 77 | 58 | 182 | 840 |
| Ord.8 | [±kNm] | 78 | 15 | 286 | 147 |
| Ord.9 | [±kNm] | 1361 | 88 | 65 | 52 |
| Ord.10 | [±kNm] | 20 | 990 | 55 | 45 |
| Ord.11 | [±kNm] | 12 | 39 | 503 | 30 |
| Ord.12 | [±kNm] | 9 | 2 | 10 | 285 |
| Lateral X-Moments M_{LX} | | | | | |
| Ord.1 | [±kNm] | 587 | 134 | 135 | 914 |
| Ord.2 | [±kNm] | 329 | 219 | 322 | 107 |
| Ord.3 | [±kNm] | 2388 | 2990 | 3747 | 4176 |
| Ord.4 | [±kNm] | 2204 | 2304 | 951 | 3871 |
| Ord.5 | [±kNm] | 1974 | 319 | 1017 | 1355 |
| Ord.6 | [±kNm] | 3003 | 743 | 450 | 516 |
| Ord.7 | [±kNm] | 475 | 2801 | 328 | 550 |
| Ord.8 | [±kNm] | 170 | 206 | 1826 | 859 |
| Ord.9 | [±kNm] | 15 | 42 | 429 | 1247 |
| Ord.10 | [±kNm] | 82 | 12 | 48 | 305 |
| Ord.11 | [±kNm] | 24 | 14 | 127 | 105 |
| Ord.12 | [±kNm] | 109 | 7 | 31 | 20 |
| Torque variation | [±kNm] | 2238 | 1447 | 2690 | 2320 |

* No engine fitted 2nd order balancer available. If reduction of M2v is needed, an external compensator has to be applied.

The values for other engine ratings are available on request

The resulting lateral guide force can be calculated as follows: $FL = MLH \times 0.192$ [kN]

6-12 X92 / Free external mass moments
Power related unbalance (PRU)
Rating R1 6450 kW/Cyl. @ 80 rpm

