**.357 Magnum - Hornady FP-XTP 158gr - RS24**



## User Data:

**Date:25-Aug-2017** **Time:11:39:19** **File: *.dat**

**Comment** **6" barrel - 40.39mm COL - 9.7gr start load - 382m/s - 1905bar**

| | | | | | |
|---|---|---|---|---|---|
| **Cartridge / Caliber** | **.357 Magnum (CIP)** | | **Bullet** | **.357, 158, Hornady FP/XTP 35** | |
| Maximum Average Pressure, allowed | 3000 bar | 43511 psi. (Piezo CIP) | | with flatbase | |
| Groove Caliber | 9,07 mm | 0,357 in. | Bullet Weight | 10,24 gm | 158,0 gr. |
| Case Capacity, overflow | 1,662 cm³ | 25,6 gr. H2O | Bullet Length | 16,87 mm | 0,664 in. |
| Case Length | 32,77 mm | 1,290 in. | Bullet Seating Depth | 9,25 mm | 0,364 in. |
| Cartridge O.A. Length | 40,39 mm | 1,590 in. | Barrel/Tube Length | 152,4 mm | 6,0 in. |
| Shot Start / Init Pressure | 150,0 bar | 2176 psi. | Cross Section Area of Bore | 0,6257 cm² | 0,09698 in.² |
| **Propellant type** | **ReloadSwiss RS 24** | | | | |
| Charge Weight | 0,629 gm | 9,7 gr. | Load Density | 0,591 gm/cm³ | 149,5 gr./in.³ |
| Heat of Explosion, Potential | 4370 J/gm | 283,2 J/gr. | Energy Density of Charge | 2583 J/cm³ | 42328 J/in.³ |
| Propellant Solid Density | 1,6 gm/cm³ | 404,63 gr./in.³ | Used Ratio of Specific Heats cp/cv | 1,2277 | |
| Burning Rate Factor Ba | 1,8 1/s | | Weighting Factor | 0,75 | |
| Burning Function Limit Z1 | 0,295 | | Prog.-/ Degressivity Factor a0 | 0,145 | |
| Factor b | 1,216 | | Bulk Density | 0,825 gm/cm³ | 208,6 gr./in.³ |

## Calculated and Estimated Data:

| | | | | | |
|---|---|---|---|---|---|
| Bullet Shank Seating Depth | 9,25 mm | 0,364 in. | Capacity Displaced by Seated Bullet | 0,599 cm³ | 0,0365 in.³ |
| Useable Case Capacity | 1,064 cm³ | 0,0649 in.³ | Bullet Travel at Muzzle Exit | 128,88 mm | 5,07 in. |
| Loading Ratio("Density") / Filling | 71.7 % | | Charge Fraction Burnt at Shot Start | 1,61 % | |
| **Predicted Data:** | | | | | |
| Maximum Chamber Pressure | 1905 bar | 27634 psi. | Bullet Travel at Pmax | 10,1 mm | 0,40 in. |
| **at Muzzle Exit:** | | | | | |
| Bullet Velocity | 381,7 m/s | 1252 fps. | Pressure at Muzzle | 437 bar | 6340 psi. |
| Bullet Energy | 746 Joule | 550 ft.lbs. | Bullet Barrel Time | 0,632 ms | |
| Propellant Burnt | 92,2 % | | Ballistic Efficiency | 27,2 % | |

Check Loading Manuals for Safe Minimum Charge Weight to Avoid Hazardous Ignition Conditions like Secondary Explosion Effects !
Real maximum (peak) of pressure is reached while bullet moves within barrel.
End of combustion occurs after the bullet's base passes muzzle.

**Table of incremented charges ranging from +15,0% to -30,0% of above specified charge**

D A N G E R ! : Table data may exceed maximum average pressures ! Pressures exceeding SAAMI or CIP specs are printed underlined!

| Diff. | Charge Weight | | Muzzle Vel. | | Muzzle Energy | | Max. Pressure | | Muzzle Pressure | | Prop.Burnt | B_Time | L.R./Filling |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | Gramm | Grains | m/s | fps | Joule | ft.lbs | bar | psi | bar | psi | % | ms | % |
| -30,0 | 0,44 | 6,8 | 278 | 913 | 396 | 292 | 919 | 13322 | 268 | 3894 | 77,3 | 0,880 | 50 |
| -27,0 | 0,46 | 7,1 | 289 | 947 | 427 | 315 | 993 | 14404 | 286 | 4141 | 79,1 | 0,850 | 52 |
| -24,0 | 0,48 | 7,4 | 299 | 981 | 458 | 338 | 1073 | 15556 | 303 | 4390 | 80,9 | 0,822 | 54 |
| -21,0 | 0,50 | 7,7 | 310 | 1016 | 491 | 362 | 1157 | 16781 | 320 | 4639 | 82,6 | 0,795 | 57 |
| -18,0 | 0,52 | 8,0 | 320 | 1050 | 524 | 387 | 1247 | 18081 | 337 | 4888 | 84,2 | 0,769 | 59 |
| -15,0 | 0,53 | 8,2 | 330 | 1084 | 559 | 412 | 1342 | 19459 | 354 | 5136 | 85,7 | 0,745 | 61 |
| -12,0 | 0,55 | 8,5 | 341 | 1118 | 594 | 438 | 1442 | 20917 | 371 | 5382 | 87,2 | 0,722 | 63 |
| -9,0 | 0,57 | 8,8 | 351 | 1152 | 631 | 465 | 1549 | 22460 | 388 | 5627 | 88,6 | 0,700 | 65 |
| -6,0 | 0,59 | 9,1 | 361 | 1185 | 668 | 493 | 1661 | 24092 | 405 | 5868 | 89,9 | 0,676 | 67 |
| -3,0 | 0,61 | 9,4 | 372 | 1219 | 707 | 521 | 1780 | 25815 | 421 | 6106 | 91,1 | 0,653 | 69 |
| **Nominal** | **0,63** | **9,7** | **382** | **1252** | **746** | **550** | **1905** | **27634** | **437** | **6340** | **92,3** | **0,632** | **72** |
| +3,0 | 0,65 | 10,0 | 392 | 1285 | 786 | 580 | 2038 | 29554 | 453 | 6568 | 93,3 | 0,611 | 74 |
| +6,0 | 0,67 | 10,3 | 402 | 1318 | 827 | 610 | 2177 | 31580 | 468 | 6792 | 94,3 | 0,592 | 76 |
| +9,0 | 0,69 | 10,6 | 412 | 1351 | 868 | 640 | 2325 | 33717 | 483 | 7009 | 95,2 | 0,574 | 78 |
| +12,0 | 0,70 | 10,9 | 422 | 1384 | 911 | 672 | 2480 | 35971 | 498 | 7219 | 96,0 | 0,556 | 80 |
| +15,0 | 0,72 | 11,2 | 432 | 1416 | 954 | 703 | 2644 | 38348 | 512 | 7422 | 96,8 | 0,540 | 82 |

**Results caused by ±10% powder lot-to-lot burning rate variation using nominal charge**

Data for burning rate increased by 10% relative to nominal value :

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nominal | 0,63 | 9,7 | 401 | 1315 | 823 | 607 | 2206 | 31998 | 451 | 6547 | 97,3 | 0,589 | 72 |

Data for burning rate decreased by 10% relative to nominal value :

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nominal | 0,63 | 9,7 | 358 | 1176 | 657 | 485 | 1613 | 23397 | 408 | 5922 | 84,7 | 0,684 | 72 |