|  |  |
| --- | --- |
| Ćwiczenie nr 1 | Badanie prędkości odrzutu broni na wahadle strzeleckim |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Lp./Numer próby | Wartość przesunięcia  b [mm] | tg α | Kąt  α [°] | Prędkość maksymalna odrzutu swobodnego broni  Vm [km/h] | Energia odrzutu broni  Em [J] |  |  |
| 1/ |  |  |  |  |  |  |  |
| 2/ |  |  |  |  |  |  |  |
| 3/ |  |  |  |  |  |  |  |
| 4/ |  |  |  |  |  |  |  |
| 5/ |  |  |  |  |  |  |  |
| 6/ |  |  |  |  |  |  |  |
| 7/ |  |  |  |  |  |  |  |
| 8/ |  |  |  |  |  |  |  |
| 9/ |  |  |  |  |  |  |  |
| 10/ |  |  |  |  |  |  |  |
| 11/ |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| MAX |  |  |  |  |  |  |  |
| MIN |  |  |  |  |  |  |  |
| Δ |  |  |  |  |  |  |  |
| Wartość średnia |  |  |  |  |  |  |  |
| Odchylenie standardowe |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Wielkości otrzymane od prowadzącego zajęcia: | | | |  |  |  |  |
| masa broni |  |  |  |  |  | Mb [kg] |  |
| masa wahadła z bronią | |  |  |  |  | Mc [kg] |  |
| przyśpieszenie ziemskie | |  |  |  |  | g [m/s2] | 9,81 |
| wysokość od osi obrotu wahadła do promienia czujnika optycznego | | | | | | c [mm] | 275 |
| wysokość wahadła | |  |  |  |  | l [m] | 2,57 |

|  |  |
| --- | --- |
| Ćwiczenie nr 2 | Badanie charakterystyk dynamicznych broni oraz węzła gazowego broni działającej na zasadzie odprowadzenia gazów przez boczny otwór w lufie |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Ciśnienie w komorze nabojowej | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lp./Numer próby |  | Ciśnienie [MPa] | | | | | | | | | | | pśr | pmax | pmin | Δ | σp |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1/ | regulator 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2/ | regulator 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3/ | regulator 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ciśnienie w regulatorze gazowym | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lp./Numer próby |  | Ciśnienie [MPa] | | | | | | | | | | | pśr | pmax | pmin | Δ | σp |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1/ | regulator 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2/ | regulator 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3/ | regulator 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Δ | delta |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| σp | odchylenie standardowe | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Lp./Numer próby |  | Czas serii  10 pocisków [s] | Szybkostrzelność N [strz./min.] |
| 1/ | regulator 1 |  |  |
| 2/ | regulator 2 |  |  |
| 3/ | regulator 3 |  |  |

|  |  |
| --- | --- |
| Ćwiczenie nr 4 | Badanie parametrów opornika podczas strzału |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Lp./Numer próby | ciśnienie p1 [MPa] | ciśnienie p2 [MPa] | ciśnienie p3 [MPa] | przyśpieszenie zespołu odrzutowego  a [m/s2] | prędkość zespołu odrzutowego  v [m/s] | czas odrzutu  to [s] | czas powtotu tp [s] |
| 1/ |  |  |  |  |  |  |  |
| 2/ |  |  |  |  |  |  |  |
| 3/ |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| MAX |  |  |  |  |  |  |  |
| MIN |  |  |  |  |  |  |  |
| Δ |  |  |  |  |  |  |  |
| Wartość średnia |  |  |  |  |  |  |  |
| Odchylenie standardowe |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| Ćwiczenie nr 5 | Badanie efektywności hamulców wylotowych |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lp./Numer próby | Nr hamulca | Prędkość broni [m/s] | Prędkość broni vśr [m/s] | Efektywność  ξśr [%] |
| 1/ |  |  |  |  |
| 2/ |  |  |
| 3/ |  |  |
| 4/ |  |  |  |  |
| 5/ |  |  |
| 6/ |  |  |
| 7/ |  |  |  |  |
| 8/ |  |  |
| 9/ |  |  |
| 10/ |  |  |  |  |
| 11/ |  |  |
| 12/ |  |  |
| 13/ |  |  |  |  |
| 14/ |  |  |
| 15/ |  |  |
| 16/ |  |  |  |  |
| 17/ |  |  |
| 18/ |  |  |
| 19/ |  |  |  |  |
| 20/ |  |  |
| 21/ |  |  |
| 22/ |  |  |  |  |
| 23/ |  |  |
| 24/ |  |  |

|  |  |
| --- | --- |
| Ćwiczenie nr 6 | Badanie dwukomorowych układów miotających |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lp./Numer próby | Czas [s] | Prędkość  V0,5 [m/s] | Ciśnienie pw [MPa] | Ciśnienie  pn [MPa] |
| 1/ |  |  |  |  |
| 2/ |  |  |  |  |
| 3/ |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| MAX |  |  |  |  |
| MIN |  |  |  |  |
| Δ |  |  |  |  |
| Wartość średnia |  |  |  |  |
| Odchylenie standardowe |  |  |  |  |

|  |  |
| --- | --- |
| Ćwiczenie nr 7 | Pomiar oporu siły spustu przy użyciu urządzenia spustowego REFICO-F |

|  |  |  |  |
| --- | --- | --- | --- |
| SA  Nazwa broni 5,56 mm kbk BERYL | | | |
| Lp. | Fmax [N] | tmax [s] | s [mm] |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |
|  |  |  |  |
|  |  |  |  |
| MAX |  |  |  |
| MIN |  |  |  |
| Δ |  |  |  |
| Wartość średnia |  |  |  |
| Odchylenie standardowe |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| DA  Nazwa broni 9 mm pistolet P-83 | | | |
| Lp. | Fmax [N] | tmax [s] | s [mm] |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |
|  |  |  |  |
|  |  |  |  |
| MAX |  |  |  |
| MIN |  |  |  |
| Δ |  |  |  |
| Wartość średnia |  |  |  |
| Odchylenie standardowe |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| SEMI DAO  Nazwa broni 9 mm pistolet GLOCK 17 | | | |
| Lp. | Fmax [N] | tmax [s] | s [mm] |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |
|  |  |  |  |
|  |  |  |  |
| MAX |  |  |  |
| MIN |  |  |  |
| Δ |  |  |  |
| Wartość średnia |  |  |  |
| Odchylenie standardowe |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| SA  Nazwa broni 9 mm pistolet P-83 | | | |
| Lp. | Fmax [N] | tmax [s] | s [mm] |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |
|  |  |  |  |
|  |  |  |  |
| MAX |  |  |  |
| MIN |  |  |  |
| Δ |  |  |  |
| Wartość średnia |  |  |  |
| Odchylenie standardowe |  |  |  |

|  |  |
| --- | --- |
| Ćwiczenie nr 7 | Pomiar oporu siły spustu przy użyciu urządzenia spustowego REFICO-F |

|  |  |  |  |
| --- | --- | --- | --- |
| SA  Nazwa broni 7,62 mm kbk AKM | | | |
| Lp. | Fmax [N] | tmax [s] | s [mm] |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |
|  |  |  |  |
|  |  |  |  |
| MAX |  |  |  |
| MIN |  |  |  |
| Δ |  |  |  |
| Wartość średnia |  |  |  |
| Odchylenie standardowe |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| DA  Nazwa broni 9 mm pistolet MAG-98 | | | |
| Lp. | Fmax [N] | tmax [s] | s [mm] |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |
|  |  |  |  |
|  |  |  |  |
| MAX |  |  |  |
| MIN |  |  |  |
| Δ |  |  |  |
| Wartość średnia |  |  |  |
| Odchylenie standardowe |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| SEMI DAO  Nazwa broni 9 mm pistolet WIST-94 | | | |
| Lp. | Fmax [N] | tmax [s] | s [mm] |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |
|  |  |  |  |
|  |  |  |  |
| MAX |  |  |  |
| MIN |  |  |  |
| Δ |  |  |  |
| Wartość średnia |  |  |  |
| Odchylenie standardowe |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| SA  Nazwa broni 9 mm pistolet MAG-98 | | | |
| Lp. | Fmax [N] | tmax [s] | s [mm] |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |
|  |  |  |  |
|  |  |  |  |
| MAX |  |  |  |
| MIN |  |  |  |
| Δ |  |  |  |
| Wartość średnia |  |  |  |
| Odchylenie standardowe |  |  |  |