

This paper presents the results of the development of new silencers with spherical baffles for submachine guns.

Submachine guns are intermediate between pistols and rifles. They provide a high fire density at close range. Submachine guns are automatic weapons that usually use pistol cartridges and are designed, as a rule, for continuous fire at a rate up to 1,000 rounds/min. Submachine guns are equipped with capacious magazines (20 to 40 rounds) and a simple sight, which provides a firing range up to 200 m. The MP5 developed by Heckler & Koch for the 9×19 mm cartridge is the most widely used submachine gun in the world.

Due to its reliability and accuracy, the MP5 has become very popular and is officially adopted in more than forty countries. In Ukraine, the MP5 is adopted by law-enforcement agencies. One of its modifications – the MKM-091 for the 9×21 mm cartridge – is produced in Ukraine. Because of this, our attention was focused on the development of silencers for MP5 submachine guns.

In this paper, the distribution of the powder gas flow inside silencers of these types is considered, the features of design solutions are shown, and the design of the internal components is described with reference to their effect on the overall performance depending on their embodiments.

Silencers with spherical baffles completely eliminate muzzle flash.

Full-scale tests of the silencers developed were conducted with cartridges of different energy capacities, and the test results showed that:

- the sound suppression efficiency of the silencers compares well with that for the best foreign silencers at comparable dimensions and mass;
- the silencers are less expensive due to the use of advanced technologies in the manufacture of their structural components and the silencers as a whole;
- the silencers do not affect the automatic operation, firing accuracy, shot grouping, or performance characteristics of submachine guns.

The technical characteristics of the silencers reported in this paper demonstrate their compactness, reliability, and high sound suppression efficiency.

9×19 « »
1000
(20 – 40) 200 [1 – 3].

[2, 3].

	Steyr AUG «PARA»	« » 12	« - » L2A3	« »
,	9×19	9×19	9×19	9×19
/ , -	25, 32	20, 32 ,40	34, 10, 15 / 10×2, 15×2, 34×2	20, 25, 32
(),	3,3	3,0	2,72	2,7
/ ,	665 / 420	645 / 418	483 (-)	600 / 360
,	420	200	198	197
./ ,	6 / 250	6 / 250	6 / 250	4 / 254
, /	400	381	390	352
/ :	650–750	550	550	950

MP5 « » MP5. -
 1962 . Heckler & Koch G3. -
 , MP5 . -
 Heckler & Koch -
 MP5, , (-
 9,0) . MP5 , ,
 , MP5 , -
 [4]. -
 9×21 MP5 – MKM-091 –
 - MP5. . 2,
 . 1 – 2 [5].

	A2/A4	A3/A5	K/KA4	KA1/KA5	SD1/SD4	SD2/SD5	SD3/SD6
,	2,54	3,08	2	2	2,8	3,1	3,4
,	680	700	–	–	–	–	780
,	–	550	325	325	550	–	–
,	225	225	115	115	146	146	146
,	50	50	60	50	60	60	60
,	260	260	210	210	210	210	210
,	340	340	260	190	340	340	340
/ ,	800	800	900	900	800	800	800
, /c	400	400	375	375	285	285	285
,	650	650	570	570	380	380	380

* 9×19 « ».



HSG94K –



SMG-PK –

. 1 –

MP5:



. 2 – MP5A2 MP5P3 –

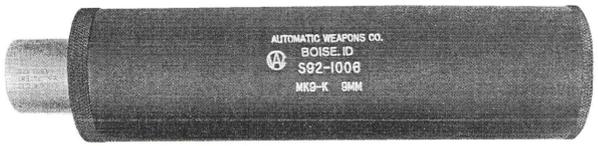
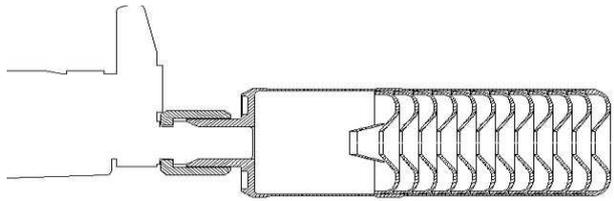
Pakistan Ordnance Factories

MP5. () -
 R16MP5 (.3) Reflex
 Reflex
 R16MP5 143,0
 Reflex (17,0 – 30,0) -
 .3 [6].

3 – MP5.

225	-	9 HV	383	157	-
225	BR-Tuote R16MP5	9 HV	390	137	20
225	-	9 SS	312	155	-
225	BR-Tuote R16MP5	9 SS	308	137	18
225	LEI MP5	9 HV	381	131	26
225	LEI MP5	9 SS	310	125	30

-9
 Gemtech TRI-Lock,
 338,0 51,0 - 853,0 [7].
 303. -9 Gemtech
 (.3) -9 (51,0),
 -9 216,0
 Bixler. 577,0 .



.3 – R16MP5 -9

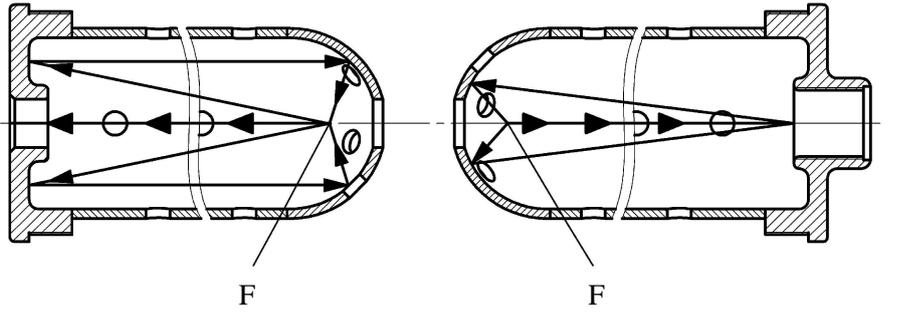
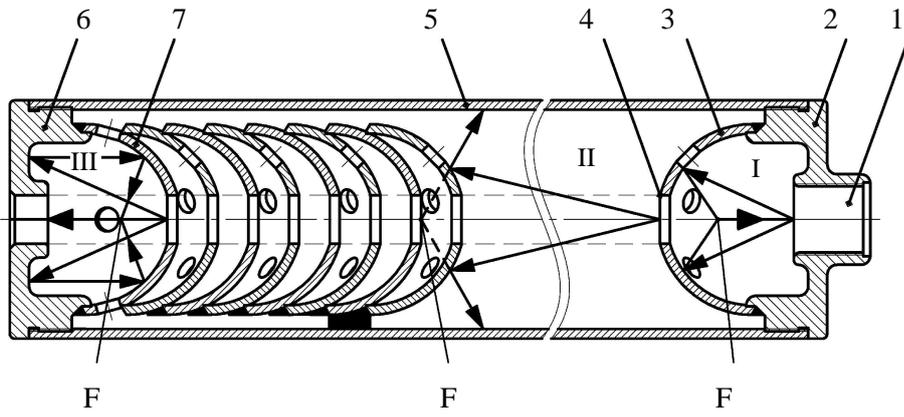
Raptor 6061-T6 2024, 303. 231,0
 Lock
 Gemtech TRI-Lock – Raptor 35,0
 2024 TRI- 277,0
 Raptor
 TRI-Lock
 Raptor
 MINITAC, 11 35,0 , 226,0 , 316,0
 Raptor MINITAC. , Raptor 12 , -
 Raptor
 -9 Gemtech. .4.
 4 –

MP5

		, dBA			
		Winchester USA Super-sonic	G&L sub-sonic	Dater VV 20 Subsonic	Winchester Silvertip HP Subsonic
AWC MK-9	Ø51×338 ; 853	31	33	32	33
Gemtech Raptor	Ø35×231 ; 277	21	27	26	25
Gemtech MK-9-K	Ø51×216 ; 577	28	–	30	30
Gemtech MINITAC	Ø35×226 ; 316	18	20	24	19

ASTUR () -
 MP5 MKE T94 . -
 (24 – 26)
 [8].
 05 .18-9,0 (1 2). -
 Heckler & Koch 9,0 MP5 KA1/KA5 -
 (.3). -

I – II – III.



.3-

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()

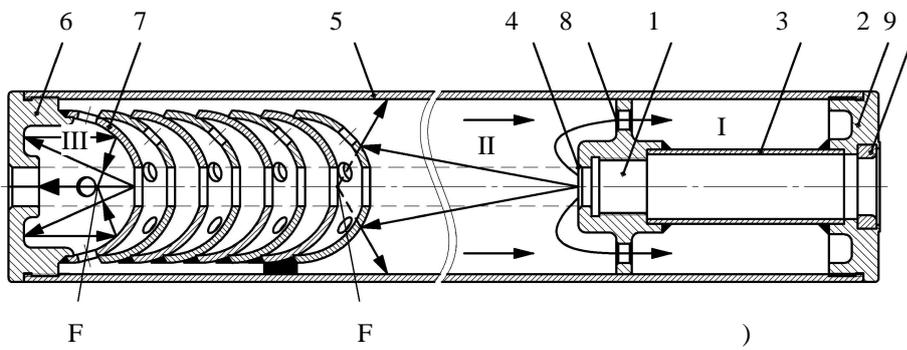
2, 4. 3 (1 I),
5 , 3,

[9].

II,
) ,

I.
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-

III, I
 05 .18-9,0 1 -04 .18-9,0).
 (.4 - 6)
 MP5 A2/A4 Heckler & Koch 9,0 -
 -05 .18-9,0 (2 3).
 75,0
 -05 .18-9,0 1 -04 .18-9,0
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 I. 2
 8 3.
 II,
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 I, 2,
 6 7
 III, I. III
 .5
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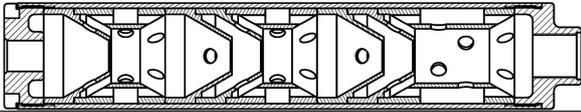
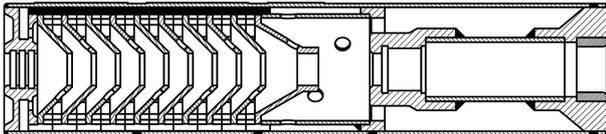
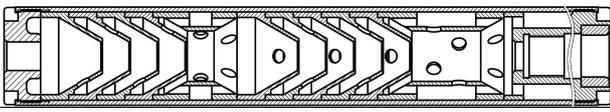
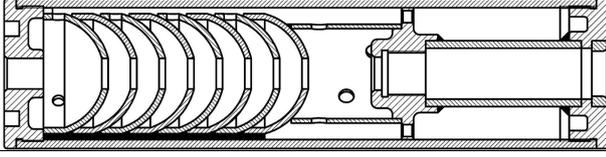
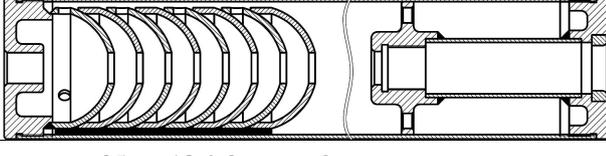
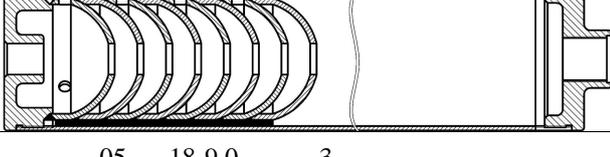
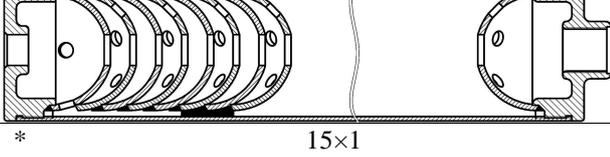


.4-

)
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()



.5-
) -16 .15-9,0 1;) -14 .15-9,0 ;
) -16 .15-9,0 3;) -05 .18-9,0

<p>-16 .15-9,0 1</p> 	<p>Ø35×190 ; 260 ; 26</p>
<p>-14 .15-9,0 1</p> 	<p>Ø44×200 ; 520 ; 28</p>
<p>-16 .15-9,0 3</p> 	<p>Ø35×260 ; 350 ; 28</p>
<p>-04 .18-9,0 1</p> 	<p>Ø50×200 ; 450 ; 28</p>
<p>-05 .18-9,0 1</p> 	<p>Ø50×375 ; 500 ; 34</p>
<p>-05 .18-9,0 2</p> 	<p>Ø50×309 ; 520 ; 30</p>
<p>-05 .18-9,0 3</p> 	<p>Ø50×309 ; 580 ; 32</p>

* 15×1



. 6 – - MP5 KA1/KA5 -05AT.18-9,0

	17 33	28 34
2	Ø35×226 Ø51×338	Ø50×200 Ø50×375
	277,0 853,0	450,0 580,0

5000

1. : , 2012. 520 .
2. : , 1997. 400 .
3. : , 1995. 212 .
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