



**Workshop ECHA
10-11/02/2020**

Lead in hunting and shooting



**Commission Internationale Permanente
pour l'épreuve des armes à feu portatives
(Permanent International Commission
for the proof of small firearms)**



**Portable and Civil firearm
&
Ammunition**

<https://cip-bobp.org/fr>



International treaty from 1914 between 14 countries

11 (10) countries in Europe and 3 (4) outside Europe

















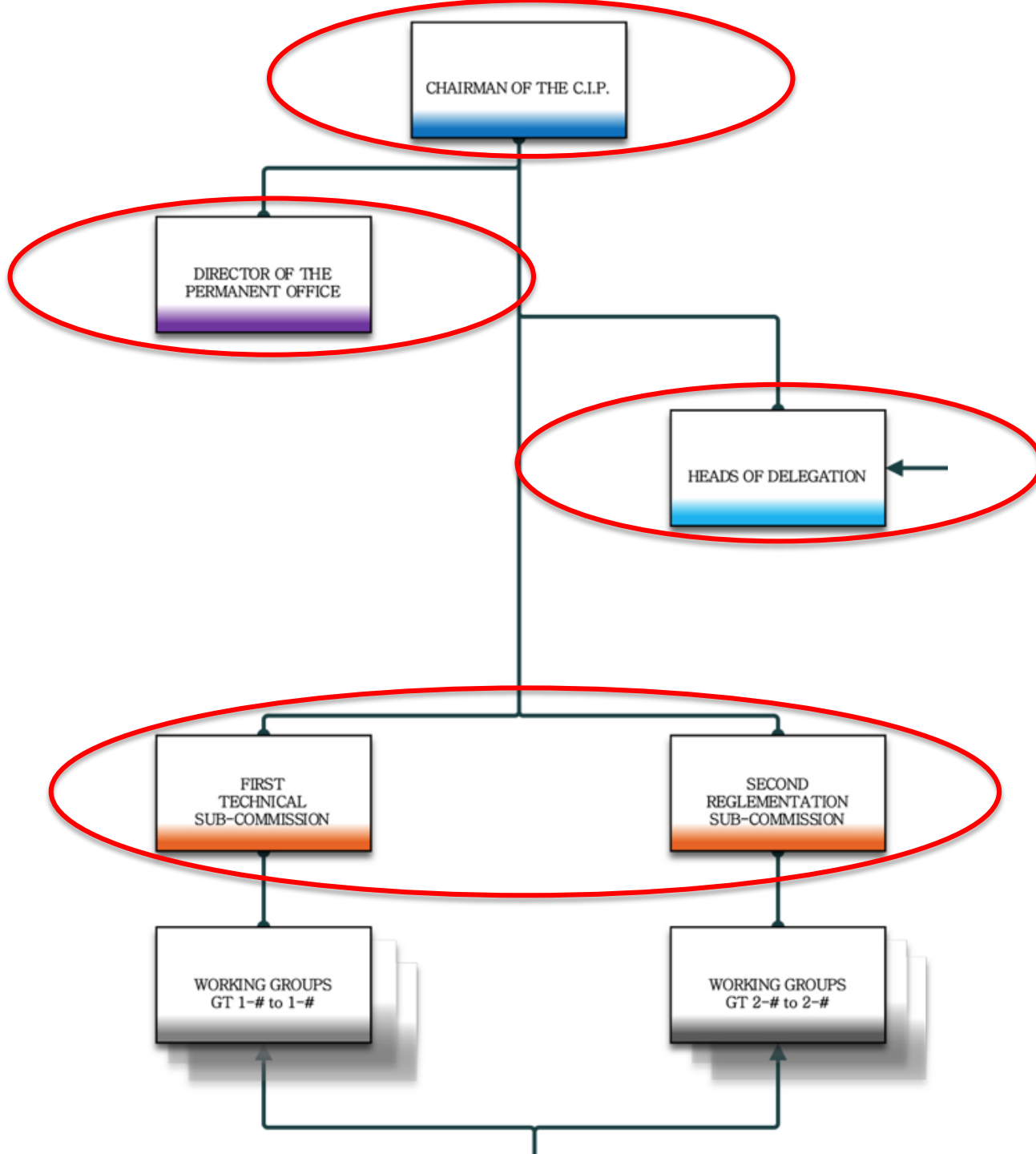
Organisation

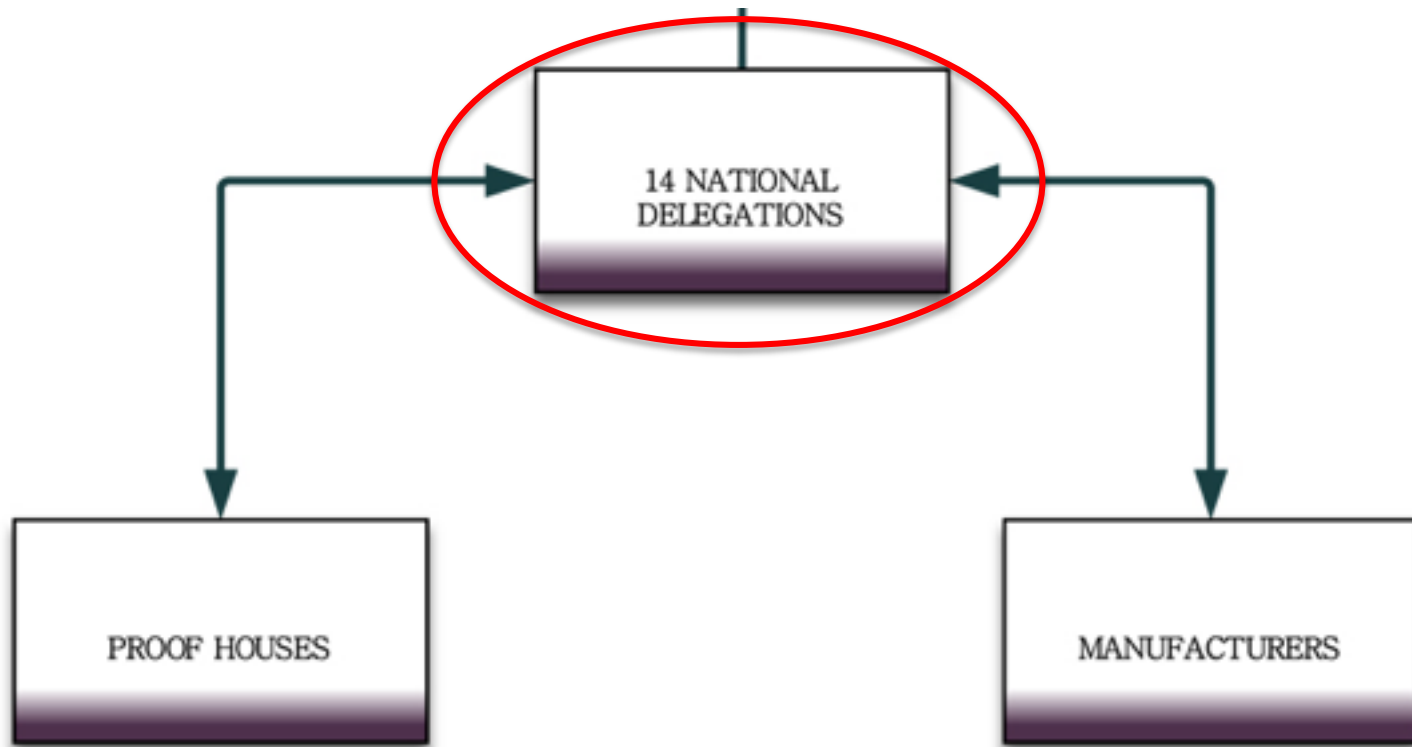
14 member countries

MEMBERS



- | | | |
|--|---|--|
|  Austria |  France |  Slovakia |
|  Belgium |  Germany |  Spain |
|  Chile |  Hungary |  United Arab Emirates |
|  Czech Republic |  Italy |  United Kingdom |
|  Finland |  Russia | |







Organisation

Relation C.I.P / SAAMI

- The C.I.P. Technical Subcommittee is in almost permanent contact with the Technical Committee of the [SAAMI](#) (Sporting Arms and Ammunition Manufacturers' Institute), the association of the main manufacturers of firearms and ammunition in the United States of America.
- By collaborating, the C.I.P. and SAAMI work together to develop internationally recognized standards to ensure the safety of the shooter.



Objectives

- Decisions taken by the C.I.P. have the force of law in all member countries
- Decisions are voted by absolute majority, by diplomatic way
- Each C.I.P. member country must have at least one Proof House
- The Proof House must test the firearms and ammunition placed on the civilian market, following the C.I.P. Decisions

→ **SAFETY of the shooter**



Objectives

- Establishment of uniform rules for the Proof of firearms and ammunition in order **to ensure the reciprocal recognition of the proof marks of the signatory states** of the said convention.

<https://cip-bobp.org/en/proof-marks-in-force>

- Proofing of portable firearms in the Proof House of the manufacturer's C.I.P. country, and for imported firearms, in the Proof House of the C.I.P. country where the firearms are imported for the first time.
- Same for commercial ammunition



Proof mark & Proof House Mark





Shooter's safety

Avoid this :





TDCC

https://bobp.cip-bobp.org/en/tdcc_public

T D C C

Tables of
Dimensions of
Cartridges and
Chambers

More than 600 different calibres



COMMISSION INTERNATIONALE PERMANENTE
POUR L'EPREUVE DES ARMES A FEU PORTATIVES

ACCUEIL HOMOLOGATION **TDCC**

List of TDCC - Tab I - Cartouches à gorges

Tab I - Cartouches à gorges

Tab II - Cartouches à bourrelet

Tab III - Cartouches à culot Magnum

Tab IV - Cartouches de pistolets et revolvers

Tab V - Cartouches à percussion annulaire

Tab VI - Cartouches à but industrielles

Tab VII - Cartouches à plomb

Tab VIII - Cartouches des armes d'alarme

Tab IX - Cartouches à grenaille

Tab X - Cartouches pour d'autres armes

Tab XI - Cartouches sans étui

Calibres des armes longues à canon(s) rayé(s) pour cartouches à gorge à percussion centrale.

Les calibres métriques sont classés avant les calibres désignés à l'origine en pouces (inches). Le classement est par ordre croissant et par ordre alphabétique suivant la désignation du calibre.

Méthode transducteur

Name	Date	Rev	Country	TDCC	Annexe	M	Pt max	Pk	Pe	Ee
5 mm / 35 SMc	2009-05-05		États-unis	FR EN DE	FR EN DE	17,5	4400	5060	5500	1650
5,45 x 39	1992-07-23	2002-05-15	USSR	FR EN DE	FR EN DE	17,5	3800	4370	4750	1505
5,6 x 39	2000-02-15	2007-05-14	Russie, fédération de	FR EN DE	FR EN DE	17,5	3500	4025	4375	2100
5,6 x 50 Mag.	1984-06-14	2002-05-15	Allemagne	FR EN DE	FR EN DE	25	3800	4370	4750	1915
5,6 x 57	1984-06-14	2002-05-15	Allemagne	FR EN DE	FR EN DE	25	4400	5060	5500	2725
5,6 x 61 SE v.H.	1984-06-14	2008-09-23	Allemagne	FR EN DE	FR EN DE	25	4400	5060	5500	3005
5,7 x 28	1993-10-19	2002-05-15	Belgique	FR EN DE	FR EN DE	12	3450	3968	4313	1500
6 x 47 ATZL	1997-11-05	2002-05-15	Autriche	FR EN DE	FR EN DE	25	4050	4660	5060	2100
6 x 47 SM	2002-01-22	2006-09-19	Suisse	FR EN DE	FR EN DE	25	3900	4485	4875	2730
6 x 51 ATZL	1997-11-05	2002-05-15	Autriche	FR EN DE	FR EN DE	25	4050	4658	5060	2100
6 x 62 Freres	1984-06-14	2005-02-25	Allemagne	FR EN DE	FR EN DE	25	4300	4945	5375	3300

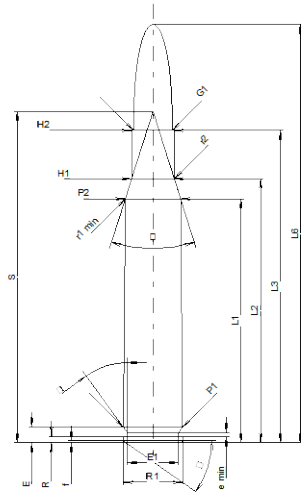
C.I.P.

30-06 Spring.

Country of Origin: US

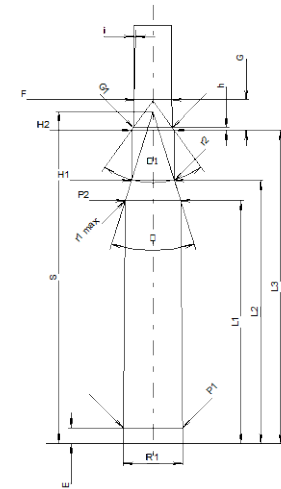
TAB.	I
Date	84-06-14
Revision	08-09-23

Alternative Names: 30-06 Springfield, 30-06, 7,62 x 63



CARTRIDGE MAXI		
Lengths		
L1 ¹⁾	=	49.49 -0.20
L2 ¹⁾	=	53.56 -0.20
L3 ¹⁾	=	63.35
L4	=	
L5	=	
L6	=	84.84
Case Head		
R	=	1.24
R1	=	12.01
R3	=	
E	=	3.16
E1	=	10.39
e min	=	0.84
Q	=	36°
f	=	0.38
Q	=	35°
Powder Chamber		
P1	=	11.96
P2 ¹⁾ *	=	11.20 -0.20
Junction Cone		
Q* [*]	=	35°
S*	=	67.25
r1 min	=	1.27
r2	=	2.54
Collar		
H1 [*]	=	8.63
H2 ¹⁾	=	8.63
Projectile		
G1 ¹⁾	=	7.85
G2	=	
F	=	
L3+G ¹⁾	=	69.54
Pressures (Energies)		
Method Transducer		
Pmax	=	4050 bar
PK	=	4658 bar
PE	=	5060 bar
M	=	25.00
EE	=	4335 Joule
Miscellaneous Dimensions		
Fe ¹⁾³⁾	=	0.10
delta L	=	0.16

CHAMBER MINI		
Lengths		
L1	=	49.27
L2	=	53.36
L3 ¹⁾	=	63.55
Breech		
R	=	
R1	=	12.04
R2	=	
R3	=	
r	=	
Powder Chamber		
E	=	3.16
P1 ¹⁾	=	11.99
P2 [*]	=	11.24
Junction Cone		
Q ¹⁾ *	=	34°30'
S*	=	67.37
r1 max	=	1.27
r2	=	3.05
Collar		
H1 [*]	=	8.70
H2 ¹⁾	=	8.65
Commencement of Rifling		
G1 ¹⁾ *	=	7.89
G ¹⁾	=	6.19
Q1 [*]	=	71°25'48"
h	=	0.53
s	=	
i ¹⁾ *	=	1°22'
w	=	
Barrel		
F ¹⁾ *	=	7.62
Z ¹⁾	=	7.82
Grooves		
b	=	4.49
N	=	4
u	=	254.00
Q	=	47.55 mm ²

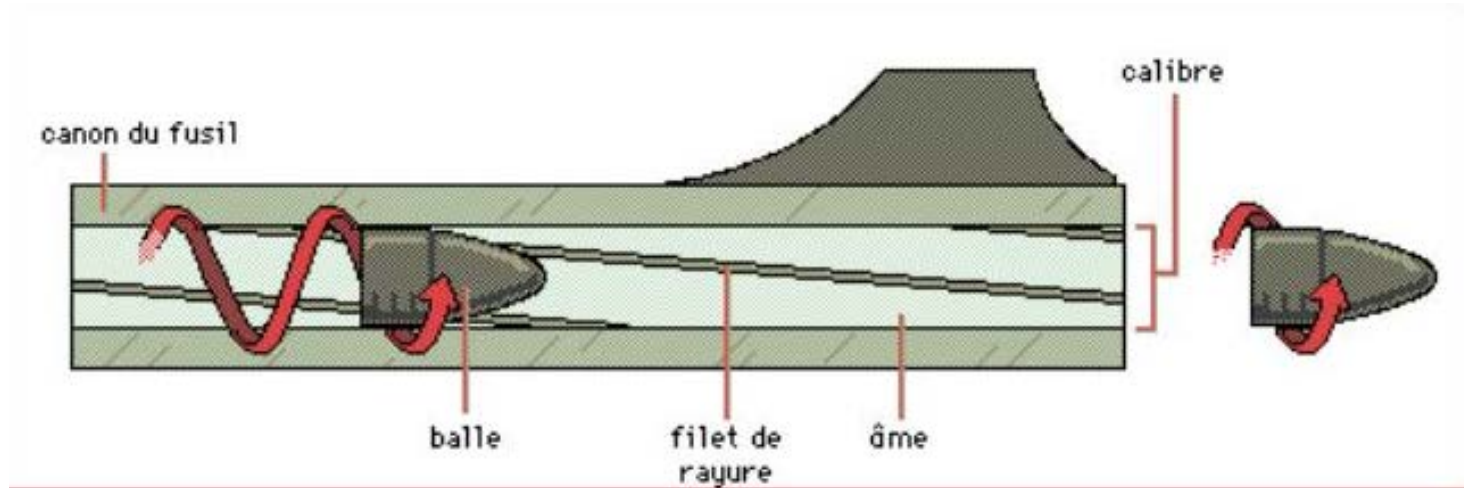


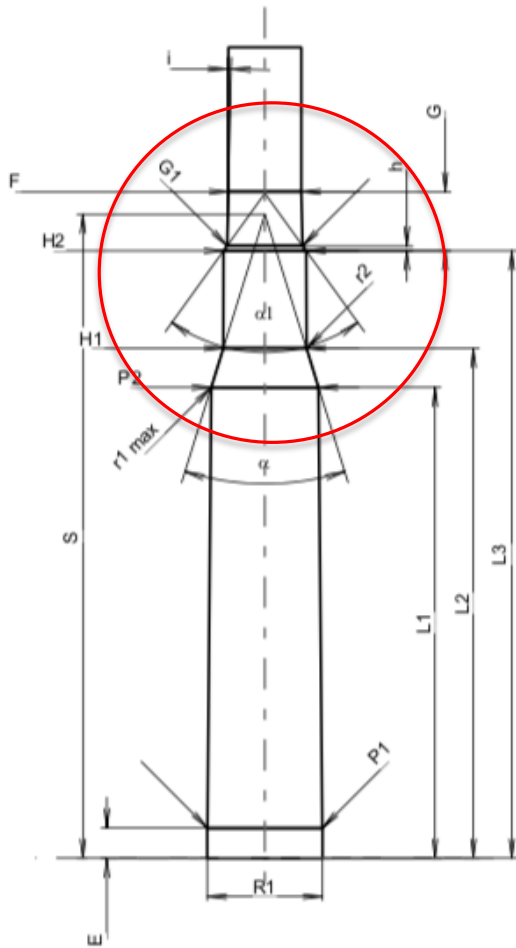
Scale 1:1.05

Dimensions in << mm >>
Dimensions and Tolerances for Proof Barrels
see Appendix CR 1.

Notes:
1) Check for safety reasons
3) Headspace on Shoulder
* Basic dimensions

Barrel twist rate





Scale 1:1.05

Dimensions in << mm >>
Dimensions and Tolerances for Proof Barrels
see Appendix CR 1.

r1 min = 1.27
r2 = 2.54

Collar

H1* = 8.63
H2 1) = 8.63

Projectile

G1 1) = 7.85
G2 =
F =
L3+G 1) = 69.54

Pressures (Energies)

Method Transducer

Pmax = 4050 bar
PK = 4658 bar
PE = 5060 bar
M = 25.00
EE = 4335 Joule

Miscellaneous Dimensions

Fe 1)3) = 0.10
delta L = 0.16

Notes: 1) Check for safety reasons
3) Headspace on Shoulder
* Basic dimensions

r1 max = 1.27
r2 = 3.05

Collar

H1* = 8.70
H2 1) = 8.65

Commencement of Rifling

G1 1)* = 7.89
G 1) = 6.19
alpha 1* = 71°25'48"
h = 0.53
s =
i 1)* = 1°22'
w =

Barrel

F 1)* = 7.62
Z 1) = 7.82

Grooves

b = 4.49
N = 4
u = 254.00
Q = 47.55 mm²

C.I.P.

30-06 Spring.

Country of Origin: US

TAB.

I

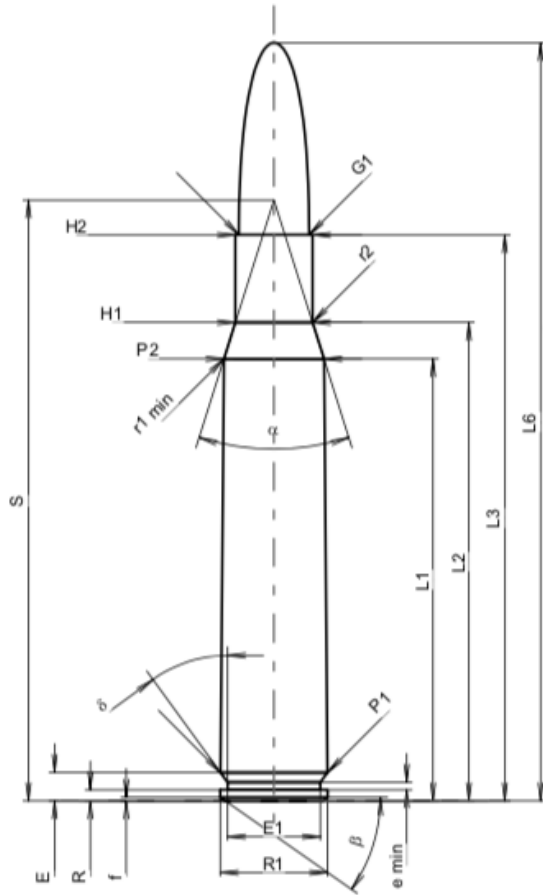
Date

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Alternative Names: 30-06 Springfield, 30-06, 7,62 x 63



CARTRIDGE MAXI

Lengths

L1 ¹⁾	=	49.49	-0.20
L2 ¹⁾	=	53.56	-0.20
L3 ¹⁾	=	63.35	
L4	=		
L5	=		
L6	=	84.84	

Case Head

R	=	1.24	
R1	=	12.01	
R3	=		
E	=	3.16	
E1	=	10.39	
e min	=	0.84	
delta	=	36°	
f	=	0.38	
beta	=	35°	

Powder Chamber

P1	=	11.96	
P2 ¹⁾ *	=	11.20	-0.20

Junction Cone

alpha [*]	=	35°	
S [*]	=	67.25	
r1 min	=	1.27	
r2	=	2.54	

Collar

H1 [*]	=	8.63	
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CHAMBER MINI

Lengths

L1	=	49.27	
L2	=	53.36	
L3 ¹⁾	=	63.55	

Breech

R	=		
R1	=	12.04	
R2	=		
R3	=		
r	=		

Powder Chamber

E	=	3.16	
P1 ¹⁾	=	11.99	
P2 [*]	=	11.24	

Junction Cone

alpha ¹⁾ *	=	34°30'	
S [*]	=	67.37	
r1 max	=	1.27	
r2	=	3.05	

Collar

H1 [*]	=	8.70	
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shot shell ammunition



List of type homologations

Search

Homologation date	from <input type="text"/> <input type="text"/> <input type="text"/> to <input type="text"/> <input type="text"/> <input type="text"/>	Proofhouse	<input type="text"/>	Manufacturer	
Cartridge type	<input type="text" value="Tab VII - Shot cartridges"/>	Cartridge	<input type="text"/>	Requested by organization	
Valid until	from <input type="text"/> <input type="text"/> <input type="text"/> to <input type="text"/> <input type="text"/> <input type="text"/>	Importer	<input type="text"/>	Dealer	

Cartridge	Proof House	Date	Manufacturer	Importer	Dealer
12/89	BE Italy Gardone	2017-07-21	CHEDDITE S.R.L.		
28/65	BE Italy Gardone	2017-01-11	ALG MUNIZIONI S.R.L.S.		
28/70	BE Italy Gardone	2017-01-11	ALG MUNIZIONI S.R.L.S.		
12/76	BE Italy Gardone	2017-01-11	FIOCCHI MUNIZIONI S.P.A.		
12/67	BE Italy Gardone		ALG MUNIZIONI S.R.L.S.		
28/63,5	BE Italy Gardone	2017-01-11	FIOCCHI MUNIZIONI S.P.A.		
12/70	BE Italy Gardone	2017-01-11	ALG MUNIZIONI S.R.L.S.		
20/70	BE Italy Gardone	2017-01-11	R.C. EXIMPORT S.R.L.		
20/67	BE Italy Gardone	2017-01-11	ALG MUNIZIONI S.R.L.S.		
28/76	BE Italy Gardone	2017-01-11	BASCHIERI & PELLAGRI SPA		
28/70	BE Italy Gardone	2017-01-11	ALG MUNIZIONI S.R.L.S.		
410/50,7	BE Italy Gardone	2017-01-11	BASCHIERI & PELLAGRI SPA		
28/65	BE Italy Gardone	2016-07-14	CLEVER S.R.L.		
28/70	BE Italy Gardone	2016-07-14	RUAG AMMOTEC GmbH		
28/70	BE Italy Gardone	2016-07-14	BROWNING INTERNATIONAL S.A.		
410/63,5	BE Italy Gardone	2016-07-14	REMINGTON		
410/76	BE Italy Gardone	2016-07-14	REMINGTON		
28/70	BE Italy Gardone	2016-07-14	GIUDICI STEFANO & C. S.N.C.		
28/70	BE Italy Gardone	2016-07-14	CLEVER S.r.L.		
12/65	BE France Saint-Etienne	2015-11-24	SHOOT HUNTING OUTDOOR		



Momentum

Lead-free shot ammunition

Calibre	Max velocity $V_{2.5}$ m/s	Max momentum $M_{2.5}$ Ns	Choke as a function of pellet diameter
10/89	440	19.0	Choke ≤ 0.5 for diameter > 4 mm
12/70	430	13.5	Choke ≤ 0.5 for diameter > 4 mm
12/73	430	15.0	idem
12/76	430	15.0	idem
12/89	430	19.0	idem



Banning lead in ammunition Consequence

For single projectile ammunition

1. Increase or decrease the twist for the stabilization of the projectile
 - for C.I.P.: change on many / most TDCC
 - for C.I.P.: compatibility with SAAMI organization
 - for manufacturers: new study, new development, new machining, new ...



Banning lead in ammunition Consequence

For single projectile ammunition

2. Increase the length of lead-free bullets

- do not fit to the magazines and/or chambers (TDCC) of many calibers
- have to be seated so deep in the cartridge case : pressure and safety problems (over C.I.P. max pressure).



Banning lead in ammunition Consequence

For shot-shell ammunition without lead pellet

1. Increase of the velocity and/or the mass of pellets to assure the quantity of energy on the target
 - for C.I.P.: Not always possible in function of the dimensions of the cartridge, respect of the values of the momentum, of the pressure
 - for manufacturers: increased resistance of firearms, new concepts, new developments, new ...



Banning lead in ammunition Consequence

For shot-shell ammunition without lead pellet

- for C.I.P. & manufacturers: old shotguns tested with lead pellet ammunition, what about steel shot ? Resistance of barrels ?



Thank you