

Effect of the dulling of headlight covers and type of bulbs on the dipped beam light spot range for a Toyota Corolla

junior warrant officer Bartłomiej Noga¹

¹ The Forensic Laboratory of the Provincial Police Headquarters in Kielce, bartlomiej.noga@ki.policja.gov.pl

Abstract

The article presents the results of a study aimed at demonstrating the relationship between the technical condition of headlight covers (in-service and brand-new) and the type of light source used (in-service and new bulbs), and the range of the light spot of a Toyota Corolla passenger car.

keywords: headlight, light spot range, light source, fading

Introduction

When reconstructing a traffic incident that occurred at nighttime, an expert encounters the problem of visibility of the road and obstacles that may be present. The fundamental issue in this type of incident, is to determine the distance from which the driver could and should have seen a particular obstacle. The perception process is affected by, among other things: physiological and psychological issues related to the perception of the human eye, the type and source of light and their condition, the design of headlights, photometric properties of obstacles and the environment [5].

Advances in technology and the development of automobiles are causing changes in vehicle lighting technology. Since the 1990s, there has been a systematic abandonment of headlight covers manufactured from corrugated glass and metal (headlight), in favor of headlights made entirely of plastic (both exterior and interior components) [3].

The use of newer and newer technology in the field of lighting means that the range of illumination of the stretch of road in front of the vehicle is increased and the quality of light is improved. On the level of safety during the operation of vehicles, have luminous properties of light sources, as well as resistance to wear [4].

Over the life of cars, the lighting characteristics of headlights and the bulbs in them deteriorate [2]. The reasons for the reduction in lighting efficiency include the fading of headlight components (covers, headlights). This is influenced by erosive damage caused by solid elements, e.g.: stones, sand, sunlight – UV radiation, traffic incidents causing various abrasions

and scratches, and incorrect headlight manufacturing technology. The effects of dulled headlight covers, or headlights, are reduced light transmission, altered light dispersion, yellowing, and deteriorated headlight aesthetics.

Research methodology

The article presents the results of a study aimed at demonstrating the relationship between the technical condition of headlights (in-service and brand-new) and the type of light source used (in-service and new bulbs), and the range of the light spot of a passenger car's dipped beam. The test was conducted on a Toyota Corolla passenger car, manufactured in 2003, which was equipped with H7 halogen bulbs, mounted at a height of about 0.7 meters from the ground. The headlight covers had visible signs of wear and tear, i.e. scratch marks and fading of the entire surface. During the tests, in-service bulbs and new, stronger bulbs were tested in headlights with dulled covers, and then in new headlights (the replacement provided for this model) – **Figures 1-2.**

The Toyota Corolla car had a current technical inspection. Prior to the test, the vehicle underwent a technical inspection to adjust the lights and air pressure in the wheels. With dulled headlights, at the diagnostic station, it was not possible to adjust the so-called cut-off. This vehicle had a manual headlight height adjustment, which was set to „0”.

The test site was the town of Wisniówka, near Kielce. Light spot coverage surveys were performed for two days, i.e. 19-20.10.2019 (due to the need to

replace the headlights and set them at the diagnostic station), in similar weather conditions, at night, on an unlit public road. The road surface was dry, clean and smooth asphalt. Measurements were made under

good atmospheric conditions, with low cloud cover, no precipitation and an air temperature of about 10°C . The width of the roadway at the test site was about 5 m, and the width of each of the two grassy shoulders



Fig. 1. Research vehicle with dulled headlights installed



Fig. 2. Research vehicle with brand new headlights installed

was about 0.5 m (Fig. 3). The road ran along a straight stretch. During the measurements, the Toyota Corolla car had the engine running, idling.

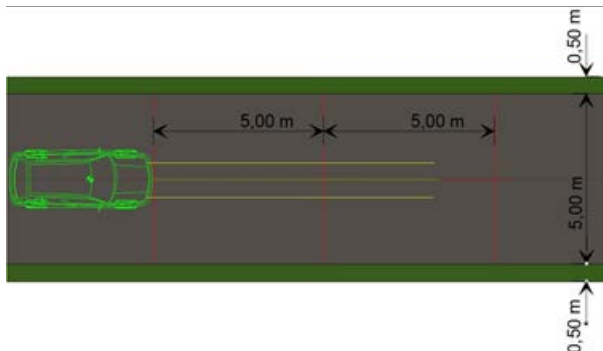


Fig. 3. Measurement station diagram

The bulbs installed in the headlights in service were PHILIPS Vision H7 12V 55W PX26d 12972PRC1 bulbs (Figure 4) and brand new, more powerful BOSCH Gigalight H7 12v 55W Plus 120 bulbs, which, according to the manufacturer, have 120% more light emitted, compared to standard bulbs (Figure 5).

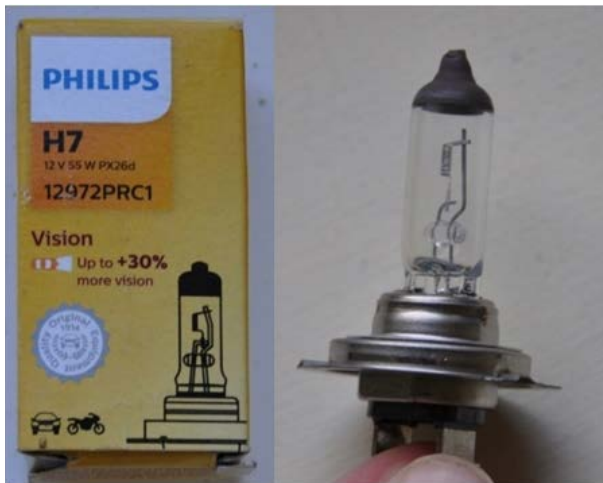


Fig. 4. Light bulbs in service

Light intensity measurements were taken every 5 meters from the front of the vehicle, along lines perpendicular to the extension of its longitudinal axis, i.e. to the left and right of it, and at three locations, i.e. left side, center, right side looking from the front of the car. In the situation of obtaining a value of 10 lux, at a distance other than a multiple of 5 m, the exact distance of the obtained value was indicated. Light intensity was measured on a *Lux Light Meter* (a device that measures light intensity from 0.01 lx to 50,000 lx). At the time of the measurements, the sensor was placed at a height of about 5 cm above ground level and pointed toward the light source. The measurement ended when the

intensity on the device reached min. 10 lux - noticing an object in night conditions by the driver when illuminated by dipped headlights.



Fig. 5. Factory new, more powerful bulbs

Results

The research study was divided into two parts. The first part was a study using in-service Valeo brand headlights (dulled and scratched) with in-service and new bulbs installed (Figure 6).



Fig. 6. Headlights in service (dulled)

The second part was a study using brand new Valeo headlights with in-service bulbs and new, more powerful ones (Figure 7).



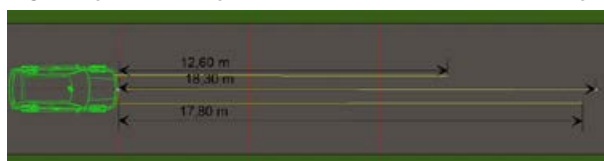
Fig. 7. Factory new headlights

Part I

Table 1. Results of measurements of the range of the light spot of 10 lx of dipped headlights, using dulled headlight covers and used bulbs

dulled headlight covers			
light bulbs used			
Left side (lx)	Centre (lx)	Right side (lx)	Distance [m]
22.1	78	33.6	5
14.4	31.8	23.2	10
10	-	-	12.6
-	13.9	13	15
-	-	10	17.8
-	10	-	18.3

Fig. 8. Light spot range of 10 lx dipped with dulled headlight



covers and bulbs in service

Table 1 and Fig. 8 show the range of the 10 lx light spot of dipped headlights using dulled headlight covers and in-service bulbs. The range for the left headlight was about 12.6 meters, for the right headlight about 17.8 meters, and for the two headlights about 18.3 meters.

Based on the Regulation of the Minister of Infrastructure of January 3, 2022, on the technical conditions of vehicles and the conditions of their necessary equipment, the range of the light spot to illuminate the road in front of the vehicle in good air clarity should reach a minimum value of 40 m at an intensity of 10 lx. With dulled headlight covers and bulbs in use, the range of the light spot did not reach the value specified in the aforementioned regulations.

Table 2. Results of measurements of the light spot range of 10 lx of dipped headlights using dulled headlight covers and new bulbs

dulled headlight covers			
new more powerful light bulbs			
Left side (lx)	Centre (lx)	Right side (lx)	Distance [m]
44.5	118.3	53.9	5
33	60.8	38.6	10
20.1	32.3	25.6	15
13.3	17.6	16.2	17.8
10	11.4	9.7	18.3
-	10	-	18.5
-	-	10	20



Fig. 10. A light spot range of 10 lx of dipped with brand new headlight covers and used bulbs



Fig. 9. Light spot range of 10 lx dipped with faded headlight covers and with new, more powerful bulbs

Table 2 and Fig. 9 show the range of the 10 lx light spot of the dipped headlights with faded headlight covers and with new, more powerful bulbs. The range for the left headlight was about 18.3 m, for the right headlight about 20 m, and for the two headlights about 18.5 m. Using the new, more powerful bulbs, there is a noticeable increase in the range of the light spot for the right headlight, which extended by about 2.3 m.

Part II

Table 3. Results of measurements of the range of the light spot of 10 lx of the dipped beam with new headlights and used bulbs

new headlights			
light bulbs used			
Left side (lx)	Centre (lx)	Right side (lx)	Distance [m]
244	193	130	5
152	162	91	10
92	140	60	15
62	93	48	20
42	60	35	25
29	43	23	30
28	31	20	35
21	24	16	40
18	19	13	45
14	15	12	50
10	12	11	55
-	-	10	56
-	10	-	57.5

Tab. 3 and Fig. 10 show the range of the 10 lux light spot of the dipped headlights using brand-new headlight covers and used bulbs. The range for the left headlight was about 55 m, for the right headlight about 56 m, and for the two headlights about 57.5 m.



Fig. 11. A light spot range of 10 lx of dipped with brand new headlight covers and new, more powerful bulbs

Table 4. The results of measurements of the range of the light spot of 10 lx of dipped headlights using new headlights and new bulbs

new headlights			Distance [m]
new bulbs			
Left side (lx)	Centre (lx)	Right side (lx)	
290	300	270	5
179	245	210	10
101	150	150	15
70	92	110	20
47	60	71	25
33	39	52	30
24	29	40	35
17	21	30	40
13	16	23	45
10	13	19	50
-	12	15	55
-	10	13	60
-	-	10	65

Tab. 4 and Fig. 11 show the range of the 10 lx light spot of the dipped headlights using brand-new headlight covers and new, more powerful bulbs. The range for the left headlight was about 50 m, for the right headlight about 65 m, and for the two headlights about 60 m.

The use of new more powerful bulbs, in a brand new headlight, resulted in an extension of the spot of light for the right headlight by about 7.5 meters compared to the bulbs in service. Also noticeable is the increased light intensity at a distance of 5 to 15 meters in front of the vehicle.

Conclusions

The tests carried out and the results obtained showed the effect of fading the headlight covers and using more powerful bulbs, on the extent of the area illuminated in front of the vehicle.

With the use of in-service bulbs followed by new, more powerful bulbs, the range of the 10 lux dipped spot extended on the left side from about 12.6 m to about 18.3 m (range increased by 45.2%) and on the right side from about 17.8 m to about 20.0 m (range increased by 12.3%) in the case of dulled and scratched headlight covers.

Using in-service bulbs followed by new, more powerful bulbs for brand-new headlights, the range of the

10 lux dipped spot extended in the center from about 57.5 m to about 60.5 m (range increased by 5.2%) and on the right side from about 59.0 m to about 65 m (range increased by 10.1%).

With dulled headlights, the light/cover limit could not be set at the diagnostic station prior to field testing, which disqualified the vehicle for further operation on the road. As well as these headlights did not achieve the minimum range of illumination of the road in front of the vehicle (40 m).

In the case of headlights with dulled covers, the use of more powerful bulbs did not result in the minimum range of illumination of the road in front of the vehicle (40 m), according to the Regulation of the Minister of Infrastructure of January 3, 2022, on the technical conditions of vehicles and the conditions of their necessary equipment, which disqualified the vehicle for further exploration in traffic - in this case, the values obtained were 18.5 m and 20 m.

References:

1. Regulation of the Minister of Infrastructure dated January 3, 2022, on the technical conditions of vehicles and the conditions of their necessary equipment.
2. Sitek, K. (2020). *Badania Techniczne pojazdów. Poradnik diagnosty (Technical Inspection of Vehicles. Diagnostician's Guide)*. Warsaw: Wydawnictwa Komunikacji i Łączności.
3. Szymaniak, D., Sobiecki. A. (2017). *Oświetlenie Pojazdów (Vehicle Lighting)*. Kwartalnik policyjny 2/2017. Legionowo: Police Training Center in Legionowo.
4. Tarkowski. S., Bieniek. P., Górski K. (2017). *Wpływ jakości źródeł światła i stanu technicznego reflektorów na rozkład plamy światła mijania pojazdów samochodach (Influence of the quality of light sources and the technical condition of headlights on the distribution of the dipped beam spot of automobile vehicles)*. *Autobusy 6/2017*. Instytut Naukowo-Wydawniczy „SPATIUM”. sp. z o.o..
5. Reza. A., Wierciński. J. (2006). *Wypadki drogowe. Vademecum biegłego sądowego, praca zbiorowa (Road accidents Vademecum of an Expert Witness, collective publication)*. Krakow: Instytut Ekspertyz Sadowych im. Prof. dr Jana Sehna w Krakowie.

REGULAMIN publikowania prac w „Problemach Kryminalistyki”

1. Redakcja „Problemów Kryminalistyki”, zwana dalej Redakcją, przyjmuje do publikacji wyłącznie oryginalne prace teoretyczne i eksperymentalne, syntetyzujące, analityczne i kazuistyczne z zakresu kryminalistyki i dziedzin pokrewnych oraz recenzje monografii naukowych autorstwa jednej lub kilku osób, zwanych dalej Autorem. Złożone teksty nie mogą być opublikowane wcześniej w innych miejscach, ani też w tym samym czasie rozpatrywane pod kątem publikacji w innych czasopismach.
2. Redakcja nie zwraca autorom nadesłanych prac, a także zastrzega sobie prawo skracania i adiustacji tekstów oraz zmiany tytułów i śródtytułów.
3. Redakcja zastrzega sobie możliwość odmowy przyjęcia artykułu bez podania przyczyn.
4. Prace napisane niezgodnie z niniejszym regulaminem nie będą publikowane.
5. Prace należy przesyłać pocztą elektroniczną na adres: clkpk@policja.gov.pl bądź dostarczyć do redakcji na nośnikach elektronicznych (CD, DVD, pendrive, które nie podlegają zwrotowi Autorowi).
6. Teksty nie powinny przekraczać 50 000 znaków wraz z rycinami, tabelami, abstraktem i bibliografią, powinny być sporządzone czcionką znormalizowaną (Times New Roman), wielkość czcionki 12, odstępy 1,5 wiersza, z marginesem 2,5 cm z lewej i prawej strony. Zapis powinien być dokonany podstawowym krojem pisma bez wyróżnień.
7. Do każdego tekstu należy dołączyć abstrakt (maksymalnie 150 słów) oraz od 3 do 7 słów kluczowych.
8. Prace mogą być dostarczone w języku polskim lub angielskim.
9. a) Prac nie należy podpisywać, a w plikach zawierających artykuły należy usunąć metadane. Przesłane prace nie mogą zawierać danych pozwalających zidentyfikować autora tekstu. b) W osobnym pliku należy umieścić wypełnione i podpisane oświadczenie (załącznik nr 1) zawierające: imię i nazwisko autora, numer ORCID, tytuł publikacji, nazwę instytucji, w której zatrudniony jest autor, zajmowane stanowisko, dane korespondencyjne, numer telefonu, adres e-mail oraz, jeśli są wymagane, informacje dotyczące źródeł finansowania dla prowadzonych badań. Jeśli artykuł został opracowany przez więcej niż jednego autora, każdy ze współautorów sporządza osobne oświadczenie.
10. Nadsyłane prace będą recenzowane przez dwóch recenzentów zgodnie z zasadą double-blind review, co oznacza to, że recenzenci nie znają tożsamości autora tekstu, a autor nie wie, kto jest recenzentem. Recenzenci wybierani są spoza instytucji, do której afiliowany jest jej autor. Raz w roku na stronie internetowej wydawnictwa zostają umieszczone nazwiska recenzentów współpracujących z czasopismem.
11. W sytuacji gdy ocena jest pozytywna, ale recenzent wskazuje na konieczność zmian i poprawek, Autor jest zobowiązany do ustosunkowania się do uwag i ewentualnego uwzględnienia sugerowanych poprawek.
12. Redakcja przyjęła i stosuje Kodeks Etyki Publikacyjnej. Wydawca, Autorzy i Recenzenci są zobowiązani do przestrzegania zasad etyki, a w szczególności zasady odpowiedzialności, uczciwości, przejrzystości i poufności. Redakcja przypomina, że ghostwriting oraz guest authorship są przejawem nierzetelności naukowej, a wszelkie wykryte przypadki będą demaskowane i dokumentowane, włącznie z powiadomieniem odpowiednich podmiotów (instytucje zatrudniające autorów, towarzystwa naukowe, stowarzyszenia edytorów naukowych itp.). W celu przeciwdziałania występowaniu tych zjawisk redakcja wymaga od poszczególnych autorów ujawnienia wkładu w powstanie publikacji.
13. Ryciny i tabele powinny być opatrzone tytułami oraz źródłami, z którego pochodzą (np. adres internetowy z podaniem daty dostępu). Ich liczbę należy ograniczyć do minimum niezbędnego dla zrozumienia tekstu. Podpisy pod rycinami oraz opisy tabel powinny być sporządzone w języku polskim lub angielskim, a numery zapisane cyframi arabskimi. Rozdzielczość zdjęć powinna wynosić 300 dpi. Ryciny i fotografie należy lokalizować w tekście za pomocą podpisów, a wszelkie materiały graficzne załączając osobno (nie w tekście).
14. Autor składając tekst do publikacji oświadcza, że przesłany tekst jest jego autorstwa i przysługują mu w pełni (wyłączne) osobiste i majątkowe prawa autorskie do tekstu. Autor oświadcza również, że ma prawo do dysponowania umieszczonymi przez niego w Utworze materiałami takimi, jak np. ryciny, grafiki, wykresy itp., oraz że ich wykorzystanie w dziele nie narusza praw osób trzecich.

15. Odsyłacze do prac przywoływanych w tekście oraz bibliografia powinny zostać sporządzone zgodnie ze standardami systemu APA (American Psychological Association), wersją siódmą:

a) odsyłacze do przywoływanych prac - w przypadku powoływania się na prace innych autorów zawsze należy podać nazwisko autora/ autorów oraz rok publikacji.

Przykłady:

- jeden autor:

Według Malinowskiego (2015) ...

W słowniku języka polskiego (Doroszewski, 1961)...

- dwóch autorów:

Według Widackiego i Dukały (2015)...

W badaniach poligraficznych stwierdza się (Widacki & Dukała 2015)...

- trzech lub więcej autorów - podajemy nazwisko pierwszego autora oraz skrót „i in.”.

We wspomnianym wyżej artykule Bejrlein i in. (2015) wykazali....

Jak wykazały badania (Bajerlein i in., 2015)...

b) dosłowne cytowania - jeśli w pracy pojawia się dosłownie cytowany fragment tekstu, powinien on zaczynać się i kończyć cudzysłowem, a bezpośrednio za cytatem należy podać źródło cytatu z numerami stron: „.....” (Kowalski, 2016, s. 31)...

c) bibliografię należy zredagować alfabetycznie w oparciu o podane przykłady:

Arntzen, F. (1989). Psychologia zeznań świadków. Państwowe Wydawnictwo Naukowe.

Buller, D.B., & Burgoon, J.K. (1996). Interpersonal Deception Theory. *Communication Theory*, 6(3), 203–242. <https://doi.org/10.1111/j.1468-2885.1996.tb00127.x>

Sweetser, E.E. (1987). The definition of lie: An examination of the folks models underlying a semantic prototype. W: D. Holland, (red.), *Cultural models in language and thought*. New York: Cambridge University Press.

Szulakiewicz, W., Grabowska-Pieńkosz, D., & Falkowska, J. (2019). Z myślą o Niepodległej: Polska myśl pedagogiczna przełomu XIX i XX wieku i okresu międz. Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika.

Widacki, J. (red.). (2012). *Kryminalistyka*. C.H. Beck.

Zimecki, M. (2016). Wykluczenie cyfrowe na Kubie: Owszem, ale w jakim stopniu? *Medium po polsku*. <https://medium.com/polish/wykluczenie-cyfrowe-na-kubie-owszem-ale-w-jakim-stopniu-9644fe1c32b5>.

d) bibliografię należy pogrupować z zachowaniem ułożenia alfabetycznego:

Bibliografia

-

Akty prawne

-

Strony internetowe

16. Po zakwalifikowaniu pracy do publikacji z Autorem zostaje zawarta umowa o przeniesieniu na Redakcję autorskich praw majątkowych (załącznik nr 2 i 3).

17. Z tytułu publikacji tekstu autorowi/autorom przysługuje wynagrodzenie naliczane w następujący sposób:

- 8 000–20 000 znaków typograficznych (ze spacjami) kwota 300 złotych brutto;

- 20 001–40 000 znaków typograficznych (ze spacjami) kwota 400 złotych brutto;

- 40 001–50 000 znaków typograficznych (ze spacjami) kwota 500 złotych brutto.

18. Wersją pierwotną (referencyjną) czasopisma jest wydanie papierowe. „Problemy Kryminalistyki” są dostępne także na stronie internetowej wydawnictwa.

TERMS AND CONDITIONS of publishing in “Issues of Forensic Science”

1. The editorial board of “Issues of Forensic Science”, referred to as “the Editorial board” accepts only original articles of theoretical and experimental content in form of synthetic, analytical and casuistic work that covers forensic science and related areas as well as reviews of scientific monographic works of one or more authors which are later referred to as “the Author”. The submitted works can neither be published in any other form, nor in the reviewing process by other publishers simultaneously.
2. The editorial board does not return the articles to its author. The board reserves the right to shortening and adjusting of the text as well as to modifying its titles and subtitles.
3. The board reserves the right to dismiss the submitted work without detailed reasons.
4. The works written against the present terms and conditions will not be published.
5. The works are to be send to the e-mail address: clkpk@policja.gov.pl or provided to the board on a digital data carrier such as CD, DVD or USB drive (the carriers are not to be returned to the author by the board).
6. The number of characters in submitted text should not exceed 40 000 including figures, tables, abstract and bibliography. The text should be formatted in Times New Roman, size 12, spacing of 1,5 lines, margins of 2,5 cm width on both sides of the document. The contents are to be made with the basic formatting, with no highlights.
7. Every submitted article is to be accompanied by an abstract (max. 150 words) and 3 to 7 key words.
8. The submitted article should be written in Polish or English.
9. The submitted article cannot be signed - it cannot bear any signs that may lead to identification of the author of the work. This data (first and last name(s) of the author(s), title of the publication, name of the author's employing institution, their position, address, phone number, e-mail, and, if required, information regarding the funding of the conducted research) should be enclosed in a separate file.
10. The submitted articles will be subject to review by two reviewers in accordance with doubleblind review principle, which entails that both reviewers and author(s) are unaware of each other's identities. Reviewers are selected from outside the institution to which the author is affiliated (authors are affiliated). Once a year, in the publishing house's website, the last names of our reviewers will be published.
11. If the article receives positive feedback from the editor, but it is suggested that modifications and corrections be introduced, the author is obliged to answer the comments and consider introducing the suggested modifications.
12. The editorial office has adopted and applies the Code of Publication Ethics. The Publisher, Authors and Reviewers are obliged to comply with the principles of ethics, in particular the principles of responsibility, integrity, transparency and confidentiality. The board recalls that ghostwriting and guest authorship are manifestation of scientific unreliability, therefore all detected incidents will be revealed and documented, including notification of relevant parties (the institutions that employ authors, scientific societies, association of scientific editors etc.). In order to counteract occurrence of such incidents, the Editorial Board requires from all the authors revealing the contributions to creation of their works.
13. Figures and Tables should be provided with titles and information on their sources (e.g. website address with a date of accessing). Their number would be limited to a minimum necessary to understand the text. Captions under Figures and descriptions of Tables should be made in Polish or English language; numbers of Figures and Tables should be expressed in Arabic digits. Photographs ought to have 300 dpi resolution. The location of Figures and Photographs in the text should be marked by the captions and all graphic materials should be delivered in separate appendices (not in the text).
14. Upon submitting a text for publication the Author declares that the text sent is of his/her authorship and he/she possesses full (exclusive) personal and property right to it. The author also declares, that he has the right to dispose of materials placed in the work, such as: Figures, graphics, Tables, etc., and that their use in the work does not infringe the rights of third parties.

1. References to other works in the text and Bibliography should be made according to APA (American Psychological Association) system, version 6:

a) references to other works – in case of referring to works of other authors the name of author/authors and year of publishing should always be given.

Examples:

- one author:

According to Malinowski (2015)...

In Polish Language Dictionary (Doroszewski, 1961)

- two authors:

According to Widacki and Dukała (2015)...

It is stated in Polygraph examinations (Widacki, Dukała, 2015)...

- three to five authors – all the names are given only in the first instance of referring to a given work in the text; in subsequent references exclusively the name of first author and an abbreviation “et al.”

As Bajerlein, Wojterska, Grewling and Kokociński (2015) demonstrated in their article...

In the article mentioned above Bajerlein

et al. (2015) demonstrated... As research has shown (Bajerlein et al., 2015)...

- six and more authors – the name of the first author followed by the abbreviation “and others” as well as the year should be provided each time for the first and subsequent links.

b) direct quotations – if a direct quotation from another work is included in the text, it should start and end with quotation marks and directly after the quotation the source with page numbers should be given:

“.....” (Kowalski, 2016, p. 31)

c) Bibliography should be made in the alphabetical order basing on the following examples:

Arntzen, F. (1989). *Psychologia zeznań świadków*. Warsaw: Państwowe Wydawnictwo Naukowe.

Buller, D.B., Burgoon, J.K. (1996). Interpersonal Deception Theory. *Communication Theory*, 6(3), 203–242.

DOI: 10.1111/j.1468-2885.1996.tb00127.x

Sweetser, E.E. (1987). The definition of lie: An examination of the folks models underlying a semantic prototype.

W: D. Holland (ed.), *Cultural Models in Language and Thought*. New York: Cambridge University Press.

Widacki, J. (ed.). (2012). *Kryminalistyka*. Warszawa: C.H. Beck.

2. Upon approval of the work for publication an Agreement on Transfer of Copyright to the Editor is concluded with the author.
3. The author is not entitled to a remuneration for the publication in the Quarterly.
4. The primary (referential) version of the Quarterly is the hard copy. “Issues of Forensic Science” is also available on the Editorial House’s website.