

**Oksana Zakharkevich<sup>1</sup>, Svetlana Kuleshova<sup>2</sup>, Galina Shvets<sup>3</sup>**

Department of Technology and Design of Sewing Garments,

Khmelnitsky national university

Institutskaya street, 11, Khmelnytsky, Ukraine, 29016

[zbir\\_vukladach@ukr.net](mailto:zbir_vukladach@ukr.net), [kuleshova\\_lana@ukr.net](mailto:kuleshova_lana@ukr.net), [galina-shvec@mail.ru](mailto:galina-shvec@mail.ru)

## **Recommended ranges of collars' parameters for transformable garments**

The main purpose of this research is to obtain recommended collars parameters for transformable garments. The list of collars types for research includes classic gents collar (tailored) with revers, convertible collar, classic roll collar, standing straight collar, mandarin collar.

The recommended ranges of collars constructions parameters for transformable garments were obtained as an intersection of the uncountable sets determine the value ranges of specific parameters of the collars constructions for garments before the transformation process and garments, which remain after it.

The obtained ranges of collars parameters could be recommended for transformable garments, the chain of transformation of which includes coat, jacket and tailored jacket. The procedure which was followed in this work can be used to obtain ranges of collars parameters for transformable garments, the chain of transformation of which include other types of garments, or even to obtain ranges of constructions parameters of other garment's parts.

*Keywords: transformable garment; collar; intersection of sets*

### **Introduction**

Transformable garments are very popular nowadays. The ability to change its function makes transformable clothes very useful when life conditions are changing as fast as nowadays. These clothes can be worn for longer periods of time and on various occasions, thus minimizing waste generation in two ways by reducing the consumer's need to purchase additional garments, and by decreasing materials consumption in the fashion industry.

Transformable clothing occupies a considerable part in the range of clothes. It includes children's wear, working wear, sportswear, clothes for pregnant women etc.

There is much different information about the appearance of the transformable clothing in literature, fashion shows, online shops, fashion magazines, online fashion reviews, patents databases. But we still have little precise information in literature about the process of achieving the quality of transformable clothing. That is why many researchers investigate the principles of transformable garments design. Koo (2012) designed functions in transformable garments for sustainability; Nazarchuk (2011) studied the transformation principles in child's clothes.

Zakharkevich & Savchuk (2013) dedicated their work to the research of the properties of materials for transformable clothing.

Researchers distinguish different types of clothes transformation: «detaching – attaching» «stretching – contracting», «regulating – fixing», «folding – unfolding», «showing – hiding», «overlapping (laying in)», «replacing», «orienting», «rearranging».

Any of the aforementioned types of transformation provides the ability for the transformable garment to change its function. And most of them change their function by the way of attaching or detaching some elements. The detached elements can also change their function or remain unused. Additional elements are not used in the original form of the garment before transformation. But they are absolutely necessary for the use in a transformed garment.

However all main parts of the transformable clothing are used in both types of garment: before and after the transformation. Thus, frequently collars are among them.

Zakharkevich (2012) described the developing of rational transformations chains of the women's shoulder clothing, which could be used for designing the transformable women's garments. Transformable women's garments belong to the chains of transformations which include different types of garments (jacket, raincoat, coat, etc.), which are made of different fabrics. So, specific parameters of basic blocks of different types of garments are different because they correspond to the fabrics' properties. Specific parameters of collars constructions are different too.

Besides this, in different instructions the value of the same collar's parameters are different and authors of various instructions recommend using some parameters which are typical only for them.

There is a lot of information in literature nowadays about collars' constructions: Syrotenko (2014) described the typified designs of the jacket pattern collars in the women's outer clothing; Krivoborodova (2002) proposed the new design of the classic gents collar; Kochanova, Akhmedulova, & Kuzmychev (2007) designed the drawings of the collar's parts by visual image and used 3D collars design, but all of these works were not concentrated on transformable garments.

That is why the main purpose of this research is to obtain recommended collars parameters for transformable women's overgarments.

### **Ranges of specific parameters of the different types of collars constructions**

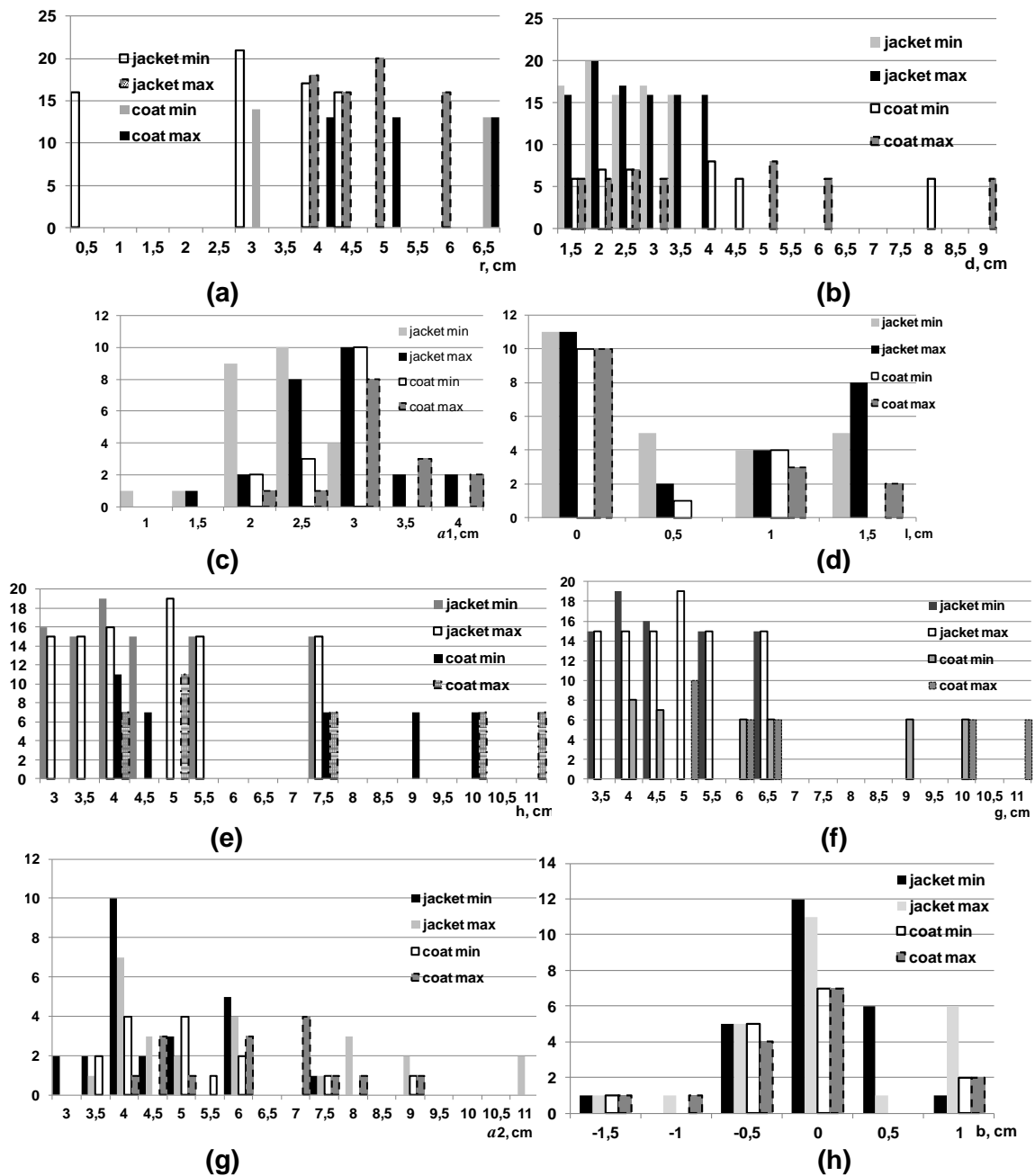
As we know, collars fall into few basic groups. Accordingly to Aldrich (2008) there are four basic groups: flat collars; standing collars; collars cut in one with the garment; collars with revers.

Only those types of collars were selected from the basic groups, which might be used in women's overgarments. That's why in this work the list of collars' types includes classic gents



Classic gents collar (tailored) with revers	<i>a1</i>	1.0÷3.0	1.5÷4.0	2.0÷3.0	2.0÷4.0	-	-	0.5
	<i>a2</i>	3.0÷7.5	3.5÷11.0	3.5÷9.0	4.0÷9.0	-	-	
	<i>d</i>	1.5÷3.5	1.5÷4.0	1.5÷8.0	1.5÷9.0	-	-	
	<i>g</i>	3.5÷6.5	3.5÷6.5	4.0÷10.0	5.0÷11.0	-	-	
	<i>h</i>	3.0÷7.5	3.0÷7.5	4.0÷10.0	4.0÷11.0	-	-	
	<i>r</i>	0.5÷4.5	4.0÷6.0	3.0÷6.5	4.0÷6.5	-	-	
	<i>l</i>	0÷1.5	0÷1.5	0÷1.0	0÷1.5	-	-	
	<i>b</i>	-1.5÷1.0	-1.5÷1.0	-1.5÷1.0	-1.5÷1.0	-	-	
Convertible collar	<i>a</i>	1.0÷7.0	2.0÷12.0	1.5÷7.0	2.0÷12.0	-	-	0.2
	<i>b</i>	1.5÷3.5	2.0÷4.5	1.5÷3.5	3.0÷4.5	-	-	
	<i>d</i>	3.0÷11.0	4.0÷14.0	3.0÷11.0	4.0÷15.0	-	-	
	<i>f</i>	5.0÷13.0	7.0÷17.5	5.0÷13.0	7.0÷19.5	-	-	
	<i>h</i>	1.0÷4.0	2.0÷6.0	1.0÷8.0	2.0÷8.0	-	-	
	<i>l-2</i>	0.2÷1.6	0.2÷3.0	0.2÷2.0	0.4÷3.0	-	-	0.2
Classic roll collar	<i>l</i>	0÷1.5	0÷2.0	0÷1.5	0÷1.5	-	-	0.5
	<i>a</i>	1.5÷3.0	2.5÷3.5	1.5÷3.5	3.0÷4.5	-	-	
	<i>b</i>	5.0÷9.0	6.0÷15.0	5.0÷8.0	8.0÷18.0	-	-	
	<i>d</i>	0÷1.0		0÷1.0		-	-	0.2
Standing straight collar	<i>a</i>	3.0÷5.0	4.0÷4.5	3.0÷6.0	4.0÷7.0	3.0÷8.0	3.5÷8.0	0.5
	<i>b</i>	3.0÷6.0	4.0÷3.0	3.0÷4.5	4.0÷7.0	3.0÷8.0	3.5÷8.0	
	<i>d</i>	0÷1.5	0÷3.0	0÷1.5	0÷3.0	0÷1.5	0÷3.0	
Mandarin collar	<i>a</i>	2.5÷6.5	2.5÷7.0	3.0÷6.5	4.0÷7.0	3.0÷4.0	4.0÷7.0	0.5
	<i>b</i>	0.5÷4.5	2.0÷6.0	0.5÷3.0	2.0÷6.0	0.5÷4.5	4.0÷6.0	
	<i>d</i>	2.0÷6.0	2.0÷7.0	2.0÷3.0	2.0÷7.0	3.0÷4.0	4.0÷7.0	
Standing collar with wings	<i>a</i>	1.0÷8.0	1.0÷10.0	2.0÷8.0	5.5÷14.0	-	-	0.5
	<i>b</i>	2.5÷7.0	3.5÷10.0	3.0÷8.5	4.0÷10.0	-	-	
	<i>d</i>	3.5÷7.5	3.5÷10.0	4.0÷5.0	8.0÷10.0	-	-	
	<i>h</i>	1.0÷3.0	1.5÷7.0	1.5÷3.0	2.0÷7.0	-	-	

Thus, the order statistic of specific parameters of collars' constructions was performed. Quantitative analysis showed that some values of the collar parameters are more common than others (fig. 2). Figure 2 represents a frequency of the value of specific parameters of the classic gents collar (tailored) with revers. The same diagrams are made and analyzed for all collars' types.



**Figure 2. Frequency of the value of specific parameters of the classic gents collar (tailored) with revers: (a) parameter  $r$ , (b) parameter  $d$ , (c) parameter  $a1$ , (d) parameter  $l$ , (e) parameter  $h$ , (f) parameter  $g$ , (g) parameter  $a2$ , and (h) parameter  $b$**

As based on the range in table 1, the frequency of the value of specific parameters of the different types of collars' constructions was analyzed. And the descriptive statistics of these parameters are presented in table 2.

**Table 2. Descriptive statistics of specific parameters of collars constructions**

Collar	Parameter	Garment	Mean		Standard Error		Standard Deviation		Sample Variance		Kurtosis		Skewness		Range		
			min	max	min	max	min	max	min	max	min	max	min	max	min	max	
Classic gents collar (tailored) with revers	a1	tailored jacket	2.30	2.82	0.10	0.12	0.48	0.58	0.23	0.33	0.98	0.66	-0.62	0.07	2.00	2.50	
		coat	2.77	3.13	0.10	0.13	0.37	0.52	0.14	0.27	0.47	0.86	-1.33	-0.17	1.00	2.00	
	a2	tailored jacket	4.58	6.02	0.22	0.46	1.12	2.28	1.24	5.22	0.37	-0.24	0.88	0.91	4.50	7.50	
		coat	5.13	6.20	0.39	0.38	1.53	1.47	2.34	2.17	1.80	-0.81	1.33	0.13	5.50	5.00	
	d	tailored jacket	2.47	2.72	0.08	0.08	0.70	0.85	0.50	0.72	-1.30	-1.26	0.08	0.09	2.00	2.50	
		coat	3.69	4.14	0.33	0.37	2.12	2.45	4.48	6.01	0.16	-0.41	1.07	0.84	6.50	7.50	
	g	tailored jacket	4.76	4.84	0.12	0.10	1.06	0.97	1.13	0.94	-1.13	-0.87	0.51	0.33	3.00	3.00	
		coat	6.47	7.38	0.36	0.41	2.24	2.42	5.01	5.83	-1.32	-1.52	0.45	0.54	6.00	6.00	
	h	tailored jacket	4.62	4.75	0.15	0.15	1.47	1.46	2.17	2.14	-0.28	-0.52	0.93	0.69	4.50	4.50	
		coat	6.69	7.24	0.40	0.44	2.47	2.72	6.10	7.41	-1.78	-1.65	0.10	0.21	6.00	7.00	
	r	tailored jacket	3.01	4.86	0.18	0.09	1.49	0.73	2.22	0.53	-0.78	-1.04	-0.84	0.46	4.00	2.00	
		coat	4.63	5.14	0.34	0.17	1.78	1.04	3.16	1.09	-2.14	-1.53	0.15	0.29	3.50	2.50	
	b	tailored jacket	0.00	0.06	0.10	0.13	0.50	0.67	0.25	0.44	2.37	-0.05	-0.82	-0.12	2.50	2.50	
		coat	-0.13	-0.17	0.16	0.17	0.61	0.65	0.37	0.42	1.64	0.92	0.05	0.03	2.50	2.50	
	Convertible collar	d	tailored jacket	5.84	8.06	0.30	0.52	1.69	2.92	2.86	8.53	1.77	-0.36	0.72	0.71	8.00	10.00
			coat	5.87	9.61	0.37	0.71	1.63	3.10	2.66	9.60	4.98	-0.70	1.49	-0.04	8.00	11.00
f		tailored jacket	8.13	11.24	0.34	0.51	1.88	2.83	3.55	8.03	0.23	-0.24	0.44	0.70	8.00	10.50	
		coat	7.97	12.84	0.39	0.71	1.70	3.11	2.90	9.67	3.71	0.10	1.09	0.07	8.00	12.50	
h		tailored jacket	2.83	4.48	0.33	0.26	1.61	1.21	2.58	1.46	-0.54	-0.86	0.17	-0.50	5.50	4.00	
		coat	3.31	4.89	0.44	0.30	1.87	1.28	3.50	1.63	0.94	2.41	0.69	-0.15	7.00	6.00	
l-2		tailored jacket	0.70	1.29	0.09	0.19	0.40	0.91	0.16	0.83	-0.69	-0.41	0.44	1.00	1.30	2.70	
		coat	1.00	1.85	0.11	0.20	0.48	0.84	0.23	0.70	-0.10	-1.05	0.05	-0.23	1.80	2.50	
Classic roll collar	l	tailored jacket	0.46	1.02	0.06	0.12	0.32	0.63	0.10	0.40	-0.31	-0.49	0.06	-0.30	1.00	2.00	
		coat	0.63	1.04	0.08	0.08	0.37	0.41	0.14	0.17	1.34	1.81	0.98	-1.16	1.50	1.50	

	<i>a</i>	tailored jacket $\tau$	2.19	3.05	0.08	0.05	0.43	0.28	0.18	0.08	-0.10	0.48	0.61	0.06	1.50	1.00
		coat	2.50	3.50	0.10	0.07	0.47	0.36	0.22	0.13	0.75	1.55	0.38	0.79	2.00	1.50
	<i>b</i>	tailored jacket	6.19	8.95	0.19	0.34	1.02	1.82	1.04	3.33	0.44	2.88	0.69	1.12	4.00	9.00
		coat	6.81	10.85	0.13	0.44	0.64	2.13	0.41	4.55	2.15	4.95	-0.85	1.82	3.00	10.00
	<i>d</i>	tailored jacket	0.28		0.06		0.35		0.12		-0.54		0.82		1.00	
		coat	0.57		0.08		0.40		0.16		-1.34		-0.30		1.00	
Standing straight collar	<i>a</i>	tailored jacket	4.13	4.82	0.23	0.25	1.13	1.31	1.29	1.71	-1.14	-1.03	0.47	0.35	3.00	4.00
		coat	4.06	5.19	0.33	0.29	1.34	1.31	1.81	1.71	-1.37	-1.52	0.75	0.02	3.00	3.50
		jacket	4.80	5.62	0.60	0.36	2.31	1.64	5.31	2.70	-1.90	-1.50	0.52	0.03	5.00	4.50
	<i>b</i>	tailored jacket	4.04	4.79	0.25	0.22	1.28	1.42	1.64	2.03	-1.15	-1.37	0.79	0.32	3.00	4.00
		coat	3.62	4.93	0.17	0.26	0.70	1.23	0.49	1.51	-1.95	-0.91	0.31	0.63	1.50	3.50
		jacket	4.43	5.56	0.63	0.32	2.34	1.64	5.49	2.69	-1.03	-1.44	1.07	0.14	5.00	4.50
	<i>d</i>	tailored jacket	0.31	0.59	0.13	0.21	0.51	0.84	0.26	0.71	0.29	3.35	1.31	1.68	1.50	3.00
		coat	0.58	0.92	0.19	0.25	0.70	0.91	0.49	0.83	-1.83	0.65	0.53	0.76	1.50	3.00
		jacket	0.55	0.95	0.21	0.28	0.69	0.93	0.47	0.87	-1.65	0.91	0.65	0.83	1.50	3.00
Mandarin collar	<i>a</i>	tailored jacket	3.56	4.58	0.24	0.29	1.20	1.61	1.44	2.60	2.50	-1.49	1.82	0.25	4.00	4.50
		coat	3.95	5.79	0.49	0.26	1.63	1.09	2.67	1.19	-0.76	-0.99	1.19	-0.59	3.50	3.00
		jacket	3.27	5.53	0.14	0.31	0.47	1.19	0.22	1.41	-0.76	-1.50	1.19	-0.09	1.00	3.00
	<i>b</i>	tailored jacket	2.53	3.79	0.22	0.37	0.91	1.52	0.83	2.31	1.34	-1.24	0.18	0.31	4.00	4.00
		coat	2.28	4.67	0.28	0.47	0.83	1.41	0.69	2.00	1.59	-0.29	-1.17	-0.61	2.50	4.00
		jacket	2.56	4.94	0.37	0.34	1.10	1.01	1.22	1.03	1.34	-2.50	-0.18	0.19	4.00	2.00
	<i>d</i>	tailored jacket	3.40	4.39	0.27	0.34	1.34	1.79	1.80	3.20	0.09	-1.42	1.11	0.03	4.00	5.00
		coat	2.67	4.80	0.17	0.46	0.50	1.78	0.25	3.17	-1.71	-0.91	-0.86	-0.44	1.00	5.00
		jacket	3.33	5.38	0.17	0.33	0.50	1.19	0.25	1.42	-1.71	-1.50	0.86	0.15	1.00	3.00
Standing collar with wings	<i>a</i>	tailored jacket	3.41	5.47	0.73	0.58	2.42	2.23	5.84	4.98	0.92	-0.55	1.42	-0.82	7.00	7.00
		coat	4.61	8.44	0.49	1.31	1.84	3.72	3.39	13.82	-0.33	-1.34	-0.36	0.09	6.50	10.00
		jacket	4.07	8.86	1.06	1.44	2.81	3.80	7.87	14.48	-1.19	-1.14	0.90	-0.25	6.50	10.00
	<i>b</i>	tailored jacket	4.53	6.35	0.39	0.49	1.61	2.02	2.58	4.09	-1.27	-0.55	0.38	0.26	4.50	6.50
		coat	4.31	6.85	0.56	0.65	2.03	2.36	4.11	5.56	1.38	-1.26	1.52	-0.35	6.00	6.50

		Куртка	3.55	6.55	0.27	0.74	0.88	2.45	0.77	6.02	-0.58	-1.39	0.64	0.00	2.50	6.50
<i>d</i>	tailored jacket		5.27	7.02	0.27	0.39	1.49	2.17	2.23	4.71	-1.29	-0.74	0.36	-0.35	4.00	6.50
	coat		4.17	7.17	0.15	0.66	0.64	2.80	0.41	7.82	-1.59	-1.59	0.42	-0.47	1.50	6.50
	jacket		4.17	7.17	0.17	0.73	0.65	2.81	0.42	7.92	-1.62	-1.62	0.43	-0.48	1.50	6.50
<i>h</i>	tailored jacket		1.96	3.43	0.16	0.37	0.78	1.94	0.61	3.74	-1.42	-0.23	0.31	1.01	2.00	5.50
	coat		1.81	3.63	0.21	0.50	0.85	2.22	0.73	4.92	-1.43	-1.19	0.67	0.66	2.00	5.50
	jacket		1.81	3.63	0.24	0.56	0.85	2.23	0.73	4.98	-1.39	-1.19	0.71	0.67	2.00	5.50

### Recommended collars parameters for transformable garments

The value ranges of specific parameters of the different types of collars' constructions were used as input data for the research.

These value ranges are uncountable sets. And an intersection of these sets determines the value ranges of specific collars parameters, which might be used for transformable clothing.

Then the recommended ranges of collars' constructions' parameters for transformable garments may be obtained as an intersection of the uncountable sets determine the value ranges of specific parameters of the collars' constructions for garments before the transformation process and garments, which remain after the transformation process:

$$S = B \cap A \cap C = \{x/ a < x < b\} \cap \{x/ c < x < d\} \cap \{x/ f < x < g\}, \quad (1)$$

S – set of collars parameter for transformable garments;

x – collars parameter;

B, A, C – set of collar's construction's parameter for the type of garments (for example coat, jacket, tailored jacket);

a, c, f – minimal value of each collar parameter for different type of garments (coat, jacket, tailored jacket);

b, d, g – maximum value of each collar's parameter for different types of garments (coat, jacket, tailored jacket).

Obviously, in the case when collar's parameter exists only for two types of garments, then formula becomes as follows:

$$S = B \cap A = \{x/ a < x < b\} \cap \{x/ c < x < d\}. \quad (2)$$

And in the case when collar's parameter exists for more than three types of garments, formula would be changed correspondingly.

The intersections of the sets are obtained. So the list of the recommended collar's parameters for classic garments and for transformable garments was compiled. The ranges are presented in tables 3-8.

**Table 3. Range of convertible collar's parameters**

Garment	$a$ (cm)	$b$ (cm)	$d$ (cm)	$f$ (cm)	$h$ (cm)	$l-2$ (cm)
<b>Classic garments</b>						
tailored jacket with collars and revers	2.6÷7.1	2.4÷3.4	5.8÷8.1	8.0÷11.2	3.2÷4.5	0.8÷1.3
classic coat	2.8÷10.0	2.4÷3.8	5.9÷9.6	8.0÷12.8	3.3÷4.9	1.0÷1.9
<b>Transformable garments</b>						
coat - tailored jacket	2.8÷7.1	2.4÷3.4	5.9÷8.1	8.0÷11.2	3.3÷4.5	1.0÷1.3

**Table 4. Range of classic roll collar's parameters**

Garment	$l$ (cm)	$a$ (cm)	$b$ (cm)	$d$ (cm)
<b>Classic garments</b>				
tailored jacket with collars and revers	0.6 ÷ 1.0	2.2 ÷ 3,1	6.2 ÷ 9.0	0.3
classic coat	0.6 ÷ 1.0	2.5 ÷ 3,1	6.9 ÷ 10.9	0.6
<b>Transformable garments</b>				
coat - tailored jacket	0.6 ÷ 1.0	2.5 ÷ 3.1	6.9 ÷ 9.0	0.5

**Table 5. Range of classic gents collar's (tailored) with revers parameters**

Garment	$a1$ (cm)	$a2$ (cm)	$d$ (cm)	$g$ (cm)	$h$ (cm)	$r$ (cm)	$l$ (cm)	$b$ (cm)
<b>Classic garments</b>								
tailored jacket with collars and revers	2.3÷2.8	4.6÷6.5	2.5÷2.7	4.8	4.6÷4.8	3.0÷4.8	0.6÷0.7	0
classic coat	2.8÷3.1	5.2÷6.2	3.8÷4.1	6.5÷7.4	6.7÷7.2	4.7÷5.2	0.3÷0.4	-0.2
<b>Transformable garments</b>								
coat - tailored jacket	2.8	5.2÷6.2	3.3	5.7	5.7	4.7÷4.8	0.5	-0.1

**Table 6. Range of standing straight collar's parameters**

Garment	$a$ (cm)	$b$ (cm)	$d$ (cm)
<b>Classic garments</b>			
tailored jacket with collars and revers	4.1÷4.8	4.0÷4.6	0.3÷0.6
jacket	4.8÷5.6	4.6÷5.6	0.6÷1.0
classic coat	4.1÷5.2	3.6÷4.9	0.6÷0.9
<b>Transformable garments</b>			
tailored jacket - jacket	4.8	-	0.6
jacket - coat	4.8÷5.2	4.6÷4.9	0.6÷0.9
coat - tailored jacket	4.1÷4.8	4.0÷4.6	0.6
tailored jacket - jacket- coat	4.8	4.6	0.6

**Table 7. Range of mandarin collar's parameters**

Garment	$a$ (cm)	$b$ (cm)	$d$ (cm)
<b>Classic garments</b>			

tailored jacket with collars and revers	3.6÷4.6	2.5÷3.8	3.4÷4.4
jacket	3.3÷5.5	2.6÷4.9	3.3÷5.4
classic coat	4.0÷5.8	2.3÷4.7	2.7÷4.8
<b>Transformable garments</b>			
tailored jacket - jacket	3.6÷4.6	2.6÷3.8	3.4÷4.4
jacket - coat	4.0÷5.5	2.6÷4.7	3.3÷4.8
coat - tailored jacket	3.6÷4.6	2.5÷3.8	3.4÷4.4
tailored jacket - jacket- coat	4.0÷4.6	2.6÷3.8	3.4÷4.4

**Table 8. Range of standing collar's with wings parameters**

Garment	<i>a</i> (cm)	<i>b</i> (cm)	<i>d</i> (cm)	<i>h</i> (cm)
<b>Classic garments</b>				
tailored jacket with collars and revers	3.4÷5.8	4.5÷6.4	5.3÷7.0	2.0÷3.4
jacket	4.1÷8.9	3.6÷6.6	4.4÷7.2	1.8÷3.6
classic coat	4.6÷8.4	4.3÷6.9	4.2÷7.2	1.8÷3.6
<b>Transformable garments</b>				
tailored jacket - jacket	4.1÷5.8	4.5÷6.4	5.3÷7.0	2.0÷3.4
jacket - coat	4.6÷8.4	4.3÷6.6	4.4÷7.2	1.8÷3.6
coat - tailored jacket	4.6÷5.8	4.5÷6.4	5.3÷7.0	2.0÷3.4
tailored jacket - jacket- coat	4.6÷5.8	4.5÷6.4	5.3÷7.0	2.0÷3.4

### Evaluation the fitting quality of transformable garment's collar

Usually the finished pattern is made up into a fabric to check the proportions and shape. Garment samples are prototype garments those are made up so that we can check the proportions of the collar (and the whole garment) and the quality of the fitting of the garment. So, figure 3 and figure 4 represent the pictures of transformable garment sample (coat-jacket). Collar's construction was designed with parameters which are inside of the recommended ranges.



**Figure 3. Garment sample (coat): (a) front, (b) right, and (c) back**



Complex index of fitting quality of transformable garment's collar was calculated by formula:

$$Q = \sum q_{ij} \gamma_i \quad (4)$$

Q – complex index;

$q_{ij}$  – average value of experts evaluation of each parameter,

$\gamma_i$  – weighting factor of parameter of fitting quality of transformable garment's collar.

Complex index for the transformable garment sample (coat-jacket) is 3.911. Maximum value of complex index is 4. So, the fitting quality of collar of transformable garment sample (coat-jacket) corresponds to a high level.

### **Conclusion**

As a conclusion it could be said that the obtained ranges of collars parameters could be recommended for transformable garments, the chain of transformation of which includes coat, jacket and tailored jacket (or at least two of them).

The procedure which was followed in this work can be used to obtain ranges of collars constructions parameters for transformable garments, the chain of transformation of which include some other type of garments, or even to obtain ranges of constructions parameters of any other parts of garment.

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