

KS

KOREAN INDUSTRIAL STANDARD

Clutch disk assemblies for automobiles

KS R 4017 : 1997

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Clutch disk assemblies for automobiles

1. Applicable Scope : This standard defines dry single plate clutch disk assemblies for automobiles (hereafter referred to as "Clutch disk"). This standard is not applicable to two-wheel vehicles.

Remarks : Any units or numerical values within parentheses { } are of the conventional unit systems for reference only.

2. Referred standards : The standards listed in **appendix table 1** are referred to, and incorporated in this standard. The latest revision of the standards is referred to.

3. Purpose on enactment : The objective of the standard is to promote standardization and rationalization of clutch disk, and secure appropriate quality of them.

4. Types : Clutch disk are classified as shown in **table 1** dependent upon employment shock-absorbers in rotation direction and axial direction, and shapes of the absorbers:

Table 1

Type upon shock-absorber in rotation direction	Type upon shock-absorber in axial direction	Abbreviation	Remarks:
Solid type	Rigid model	SR	※ See appendix Fig. 1.
	Plate-cushion model	SP	※ See appendix Fig. 2.
	Separate-cushion model	SS	See appendix Fig. 3.
	Console-cushion model	SC	※ See appendix Fig. 4.
Spring type	Rigid model	CR	※ See appendix Fig. 5.
	Plate-cushion model	CP	See appendix Fig. 6.
	Separate-cushion model	CS	See appendix Fig. 7.
	Console-cushion model	CC	See appendix Fig. 8.
Rubber type	Rigid model	RR	※ See appendix Fig. 9.
	Plate-cushion model	RP	See appendix Fig. 10.
	Separate-cushion model	RS	See appendix Fig. 11.
	Console-cushion model	RC	See appendix Fig. 12.

Remarks : 1. The solid type has no shock-absorber in axial direction.

2. Abbreviation : The outer diameter of a facing is indicated after an abbreviation as follows: CS-200: Separate-cushion model of spring type with a facing of outer diameter of 200 mm

3. Appendix Figures indicated with ※ in **table 1** are those without record of actual use.

5. Name and material of main parts : Names and materials of main parts for clutch disk shall be, in principle, as in **table 2**.

Table 2

Symbol	Parts	Materials	Remarks	
			Hardness	Depth of hardening(mm)
1	hub	S30C~S55C of KS D 3752	after quenching and tempering, HRC 18~35 normalizing	-
		SCr415~420 of KS D 3707 or SCM415~SCM420 of KS D 3711	over HV 550	more than 0.2
2	disk plate	SPC of KS D 3512 , SPH of KS D 3512 or SCM415~420 of KS D 3711	over HV 400	more than 0.1
		SK of KS D 3751 or S - C of KS D 3752	HRC 18~47	-
3	sub plate	SPC of KS D 3512 , SPH of KS D 3501 or SCM415~420 of KS D 3711	over HV 400	more than 0.1
		SK of KS D 3711 or S - C of KS D 3752	HRC 18~47	-
4	facing	KS R 4022	-	-
5	cushion plate	SK5~7 of KS D 3751	HV 345~590	-
6	torsion plate	SWP of KS D 3556 , SWOCV-V of KS D 3580 or SWOSV-V	-	-
		Rubber	-	-
7	friction spring	SK5~7 of KS D 3751	HV 345~590	-
8	friction plate	SPC of KS D 3512 or SPH of KS D 3501	over HV 400	more than 0.1
9	friction washer	SPC of KS D 3512 or SPH of KS D 3501	-	-
		fiber or asbestos	-	-
10	stopper pin	SV of KS D 3557 , SS of KS D 3503 or S-C of KS D 3752	under HRB 97	-
11	stud pin	SV of KS D 3557 , SS of KS D 3503 or S-C of KS D 3752	under HRB 97	-
12	facing rivet	C2600W, C2700W of KS D 5103	-	-
		SWRM of KS D 3554 or SV of KS D 3557	-	-
13	cushion plate rivet	SWRM of KS D 3554 or SV of KS D 3557	under HRB 95	-
14	hub rivet	SWRM of KS D 3554 or SV of KS D 3557	-	-
15	torsion spring washer	SPC of KS D 3512 or SPH of KS D 3501	over HV 400	more than 0.1

Remarks : Symbols observe **appendix Figs. 1~12**.

6. Specifications

6.1 Dimensions of facing Dimensions and tolerances of facing are shown in table 3.

Table 3

Unit : mm

Dimensions			Tolerances			Thickness difference per sheet
Outer diameter	Inner diameter	Thickness	Outer diameter	Inner diameter	Thickness	
118	85	2.8	± 0.8	± 0.8	± 0.08	under 0.08
125	90	3.0				
132	95	3.2				
140	100					
150	100 110					
160	110					
170	110					
180	125	3.2	± 1.0		± 0.1	under 0.1
((184))	((127))	3.5				
190	132					
200	130 140					
212	((140)) 150					
(215)	(150)					
224	150 160					
(225)	(150)					
236	170 (165)					
(240)	(150) (160)					
250	160					
((255))	((170))	3.5				
(260)	(170)	4.0	± 1.2	± 1.0	± 0.12	under 0.12
275	175 180					
300	175 180 190					
325	200 210					
350	210 220	4.0				
380	220 240	((4.5))				
400	236 ((250))	5.0				
410	((250)) 260 270					
430	250	5.0((5.5))				
457	280					

Remarks : It is not suggested to use the values in parentheses. The values in parentheses are the ones in **KS R 4022**, and the values in double parentheses denote the values which are not defined in **KS R 4022**.

6.2 Splines Splines are classified into involute splines and square splines.

6.2.1 Involute splines

a) Involute splines according to **KS R 2001** are shown in **table 4**.

Table 4

Unit : mm

Module	※ 0.75	1.00	1.25	※ 1.50	1.667	2.0	2.5	3.0
Nominal diameter	※ 15/18	※ 18/16	25/18	※ 21/12	20/10	28/12	※ 30/10	42/12
		※ 22/20			25/13		※ 35/12	48/14
					30/16		45/16	
					40/22			
					※ 50/28			
Number of tooth					※43.333/24			

Remarks : 1. The tolerances observe **KS R 2001**.

2. ※ denotes the values without record of use.

b) Involute splines according to SAE are shown in **table 5**.

Table 5

Unit : mm

DP	Nominal diameter/Number of tooth						
10/20	27.94/10	38.71/14					
24/48	22.225/20	※23.06/20	24.341/22	21.6/19	22.35/20	23.8/21	※17.991/16
32/64	19.685/23	20.48/24					
20/40	28.8/21						

Remarks : 1. The tolerances observe SAE.

2. ※ denotes the values without record of use.

c) Involute splines according to DIN are shown in **table 6**.

Table 6

Unit : mm

Module	Nominal diameter/Number of tooth	
1.00	25/24	20/18

Remarks : The tolerances observe DIN.

6.2.2 Square splines

a) Square splines according to **KS B 2006** are shown in **table 7**.

Table 7

Unit : mm

Number of tooth groove	Root diameter	Inner diameter	Width of tooth groove
※ 6	※ < 20	※ < 16	※ 4
8	< 42	< 36	7

Remarks : 1. The tolerances observe **KS B 2006**.

2. ※ denotes the values without record of use.

b) Square splines according to SAE are shown in table 8.

Table 8

Unit : mm

Number of tooth groove	Root diameter	Inner diameter	Width of tooth groove
10	25.502	20.540	3.912
	※ 28.702	※ 23.114	※ 4.419
	41.25	33.40	6.4

Remarks : 1. The tolerances observe SAE.

2. ※ denotes the values without record of use.

c) Square splines, which are not correspond to any of KS, SAE, DIN, shall observe **table 9**.

Table 9

Unit : mm

Number of tooth groove	Root diameter	Inner diameter	Width of tooth groove
10	※ 22.51	※ 18.23	※ 3.43
	23.88	19.20	3.696
	29.007	23.950	4.521
	35.13	28.65	5.4
	38.075	32.741	5.893
	45.00	36	5.0
	※ 52.00	※ 42.00	※ 6.0

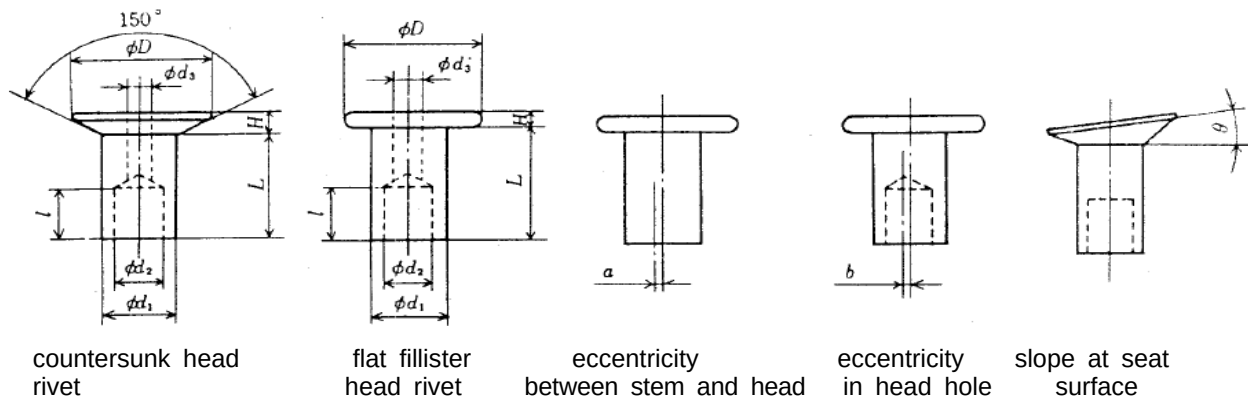
Remarks : 1. It is not recommended for the new design.

2. Tolerances shall be determined upon agreement between concerned parties.

3. ※ denotes the values without record of use.

6.3 Facing rivet Dimensions for facing rivet are shown in **table 10**.

Table 10



Unit : mm

Symbols		Nominal diameter			Tolerance
		4.0	5.0	6.0	
stem diameter d_1		4.0	5.0	6.0	± 0.1
head diameter D	countersunk head rivet	8.0 8.5(9.0)	(8.5)9.0 9.5(10)	8.5	± 0.25
	flat fillister head rivet	7.5 8.5	9.0 9.5 (10)	-	
head height H	countersunk head rivet	1.0 1.0	1.3(1.0)	1.5	0
	flat fillister head rivet	0.7	0.7 1.0	-	-0.20
hole diameter d_2		2.5 2.8	3.0 3.5 3.8	4.5	± 0.1
hollow hole diameter d_3		2.0	2.0 2.5		± 0.2
hole depth l		(2.0)	3.0	4.0	± 0.2
		2.5	3.5		
		3.0	4.0		
		3.5	4.5		
		4.0			
		4.5			
		5.0			
		5.5			
		6.0			
length under head L		3.5 4.0	5.0	5.0	
		4.5 5.0	5.5	5.5	
		5.5 6.0	6.0	6.0	
		6.5 7.0	6.5	6.5	
		7.8 8.0	7.0		
		8.5 9.0	7.5		
		9.5 10.0	8.0		
		10.5 12.0	8.5		
eccentricity between stem and head a		lower than 0.1	lower than 0.15		
eccentricity in head hole b		lower than 0.1			
slope at seat surface θ		lower than 2.0			

Remarks : The values in () are not recommended to use.