

KS

KOREAN INDUSTRIAL STANDARD

Clutch-cover assemblies for automobiles

KS R 4018 : 1997

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Clutch-cover assemblies for automobiles

1. Applicable Scope : This standard defines dry single plate clutch-cover assemblies for automobiles (hereafter referred to as a "clutch cover"). 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 **reference table 1** are referred to, and incorporated in this standard. The referred standards should be the latest revision.

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

4. Classes : Clutch covers are classified into types listed in **table 1** according to spring appearance, drive mode and flywheel appearance.

Table 1

Spring	Drive mode	Flywheel	Abbreviation	Remarks
Coil spring	Strap drive	Port type	CSP	See Ref. Fig. 1.
		Flat type	CSF	See Ref. Fig. 2.
	Lug drive	Port type	CLP	See Ref. Fig. 3.
		Flat type	CLF	See Ref. Fig. 4.
Diaphragm spring	Strap drive	Port type	DSP	See Ref. Fig. 5.
		Lug drive	DSF	See Ref. Fig. 6.
	Lug drive	Port type	DLP	See Ref. Fig. 7.
		Flat type	DLF	See Ref. Fig. 8.

Remarks **Marking method of abbreviation** The outer diameter of a facing is indicated after an abbreviation as follows:

Example CSP-200 : Facing of outer diameter of 200 mm in CSP

Note Use of **Ref. Fig. 5** and **Fig. 6** may be relevant to specific patents (**US. PAT** 3130828 valid until Apr. 27, 1981; and **B. PAT** 984808 valid until Jun. 18, 1978).

5. Name and material of main components Name and material of main components shall be, in principle, pursuant to **table 2**.

Table 2

Number	Name	Materials	Product hardness (reference)	Hardening depth(mm) (reference)
1	cover or bracket	SPC, SPH or FC	-	-
2	pressure plate	FC 200~350	HB 172~269	-
3	strap	SK-5	HV 390~510	-
4	clutch spring	diaphragm spring	SK-5	HV 390~510
		coil spring	SWP or SWOCV-V	-
5	release lever	S-C	HRC 20~30	-
		SPC, SPH, S15CK or SCM21~22	More than HV 550	More than 0.2
6	release plate	S15CK, S12C~S17C SCP or SPH	More than HV 550	More than 0.2
7	lever support release bolt or eye bolt	S33C~S58C	HRC 14~30	-
		SCM, SCr	HRC 27~33	-
		S15CK or S12C~S17C	More than HV 550	More than 0.1
8	adjust nut spring attached nut or lock nut	S15CK or S10C~S17C	More than HV 550	More than 0.2
		S33C~S58C	HRC 14~30	-
		SS41	-	-
9	pivot nut	SWRH or SWP	More than HRC 40	-
		SWRM	More than HV 500	More than 0.2
10	clip	SK5	HV 390~510	-
11	spring attached bolt or spring attached rivet	SCM3~4	HRC 27~37	-
		S30C~S53C	-	-
12	niddle roller	SUJ	More than HRC 56	-
13	pin	S48C~S53C	More than HRC 50	-
		S15CK or S10C~S17C	More than HV 550	More than 0.2
14	adjust bolt	S15CK or S10C~S17C	More than HV 550	More than 0.2
15	return spring	SWP	-	-
16	strap	SPH	More than HV 550	More than 0.2
17	spring cap	SPC or SPH	-	-
18	lever seat	SPH, SPC or S10C~S17C	More than HV 550	More than 0.2
19	pivot plate or washer	SPH	-	-

Remarks 1. Materials shall be pursuant to Korean Standards.

SPC	KS D 3512	S-C	KS D 3752	SPH	KS D 3501
SWRM	KS D 3554	SK	KS D 3751	STB	KS D 3525
SCM	KS D 3711	SS	KS D 3503		
FC	KS D 4301	SWP	KS D 3556		
SCr	KS D 3707	SWRH	KS D 3559		

2. Markings shall be pursuant to **Reference Figs. 1~8**.

6. Specification

6.1 Dimensions of pressure plate and cover Dimensions of pressure plate and attached dimensions of cover shall be, in principle, pursuant to **table 3**.

Table 3

Unit : mm

Applicable facing dimension		Pressure plate			Pitch circle diameter for cover attached bolt				Diameter for cover attached bolt
Outer diameter	Inner diameter	Outer diameter		Inner diameter	Flat type		Port type		
		(recommended)	(actual)		(recommended)	(recommended)	actual(ref.)	(recommended)	
118	85	121		(facing inner diameter) -3	147		137		6 or 8
125	90	128			154		144		
132	95	135			161		151		
140	100	143			169		159		
150	100 110	153	152		179		169	166 170	
160	110	163	163 162		189	192	179	175 184 188	
170	110	173	172		203	200 213	193		
180	125	183	183 186		213	222.25 213 216	203		
((184))	((127))	((187))	186		-	222.25	-		
190	132	193	194		225	237	213	204.2	
200	130 140	203	203		237	238 240 237 236	224		
212	((140)) 150	215			250	264	236		
(215)	(150)	(218)	216 217		-	247 251	-	252	
224	150 160	227	227 228		264	264	248		
(225)	(150)	(228)	227 228 262 278	(facing inner diameter) -4	-	266 270 264	-		
236	170 ((165))	239			276	276	260		
(240)	(150) (160)	(243)	242 244		-	278 280	-	270	
250	160	253			290	290	274		
((255))	((170))	((258))	262		-	298	-		
(260)	(170)	(264)	262 263		-	298			
275	175 180	279	278 280		316	320 311	300		
300	175 180 190	304	304 302		344	350	328		
325	200 210	329	330 336		369	368	353		
350	210 220	354	353		405		381	375	
380	220 240	384	384		435		411	405	
400	236 ((250))	404	406		459		435	456	
410	((250)) 260 270	414	415		469		445	438.15 445 456	
430	250	434	434		489		465	456	
457	280	461	460	516		492	486		

- Remarks : 1.** It is not suggested to use the values in parentheses, if possible. The values in parentheses are referred the values in **KS R 4022**, while the values in double parentheses are not specified in **KS R 4022**.
- 2.** Recommended values for pitch circle diameter are suggested to be used for new design.
- 3.** Applicable facing dimensions are pursuant to **KS R 4017**.

6.2 Allowance or tolerance for main part of clutch cover Allowance or tolerance for main part of clutch cover shall be, in principle, pursuant to **table 4**.

Table 4

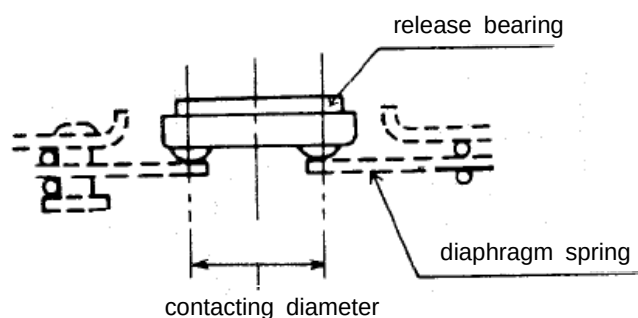
Category	Allowance or tolerance	Remarks
unbalance	M shall be under $110W^{2/3}$. If the value of W is less than 2.5Kg, it shall be less than 150gmm.	Where M: unbalance (gmm) W: Weight (mass) of rotational body
surface roughness (friction face for pressure plate)	12.5S	Pursuant to KS B 0507
affixed load	$\pm 10\%$ of reference value	Test equipment according to KS B 5521 or equivalent
lever height	- coil spring - Less than 300mm of facing outer diameter: $\pm 0.5\text{mm}$ Height difference shall be less than 0.5mm - More than 300mm of facing outer diameter: $\pm 0.7\text{mm}$ Height difference shall be less than 0.7mm - Diaphragm spring: $\pm 1.0\text{mm}$ Height difference shall be less than 0.7mm	Test method is pursuant to 7.1

6.3 Contact diameter of release bearing for diaphragm spring clutch Contact diameters observe **table 5**.

Table 5

Unit : mm

Contact diameter
38
41
44
(45)
47
(48)
50
54
58
62
68



Remakes : It is not suggested to use the values in parentheses.

7. Test method of characteristics

7.1 Measurement of lever height, and height difference between levers The lever height and the height difference between the levers are measured with a dial gauge after performing aging release at defined release stroke by making use of a jig such as flywheel. When making the measurement, insert a gauge plate corresponding with compressed thickness of a clutch disk assembly, and read the height with an indicator (See Fig. 1).

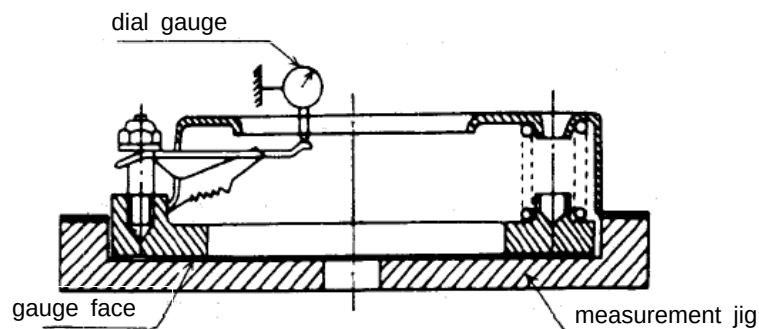


Fig. 1

7.2 Test of load characteristics

- a) Tester shall have the following functions. An example of the tester is illustrated in **fig. 2**.
- 1) The tester shall be capable of fully fixing the cover.
 - 2) Compressed load P shall evenly applied perpendicular to the pressure plate friction plane.
 - 3) Pressure load P and bend δ shall be read.
 - 4) P and δ may either be automatically or manually measured.

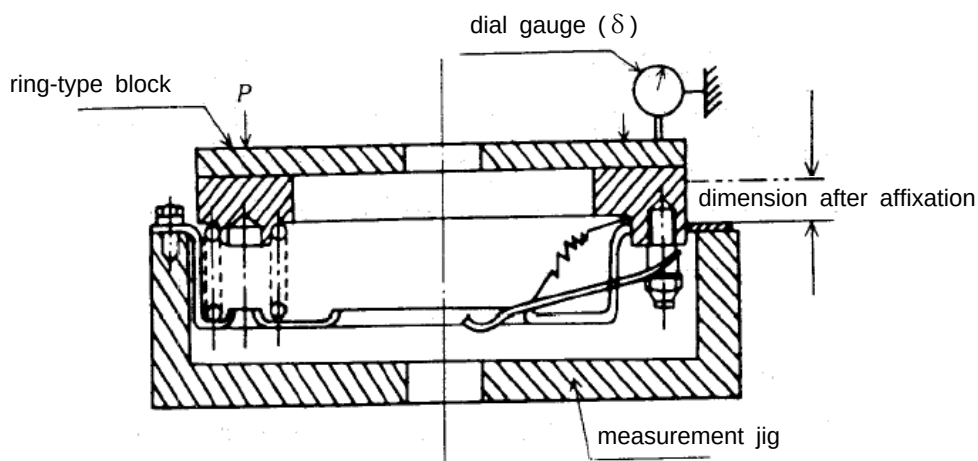


Fig. 2

b) Test shall be made as follows:

- 1) The specimen shall be affixed on the measurement jig with a bolt or other methods. Apply force to press the specimen to the maximum allowed release stroke, and then measure the load.
- 2) Press and affix the pressure plate, and measure and record P and δ . The plate shall be pressed up to the maximum allowed release stroke. Release the plate to recover to its original location, and then measure and record P at each δ . Weight of the pressure plate and the ring-type block shall be added to P .
- c) The load property is indicated as δ_1 for P_1 , and P_1 for δ_1 . Examples are illustrated in **figs. 3-1** and **3-2**. The location of P shall be read and recorded.

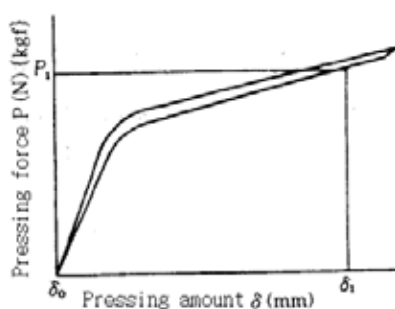


Fig. 3-1

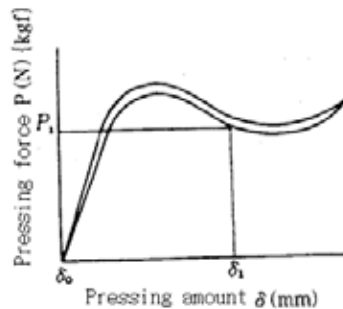


Fig. 3-2

Where,

δ_1 : Pressing amount for P_1

P_1 : Pressing force for δ_1

δ_0 : Pressing amount = 0;
free state

7.3 Test of unbalance measurement : The test method shall be determined upon agreement between concerned parties.

7.4 Test of release characteristics :

a) Tester shall have the following functions. An example of the tester is illustrated in **fig. 4**.

- 1) The tester shall be capable of fully fixing the cover.
- 2) Compressed load P shall evenly applied perpendicular to the pressure plate friction plane.
- 3) Pressure load P , pressing amount δ_L , and the pressure plate moving distance δ_p shall be read.
- 4) P , δ_L and δ_p may either be automatically or manually measured.

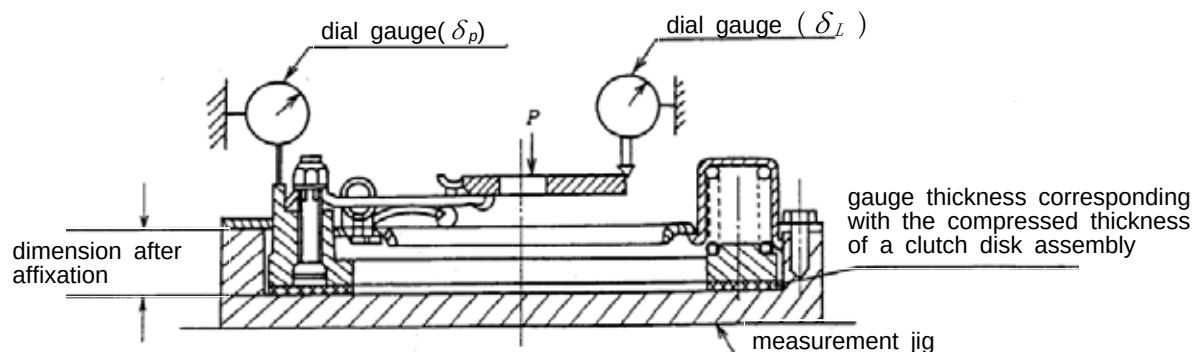
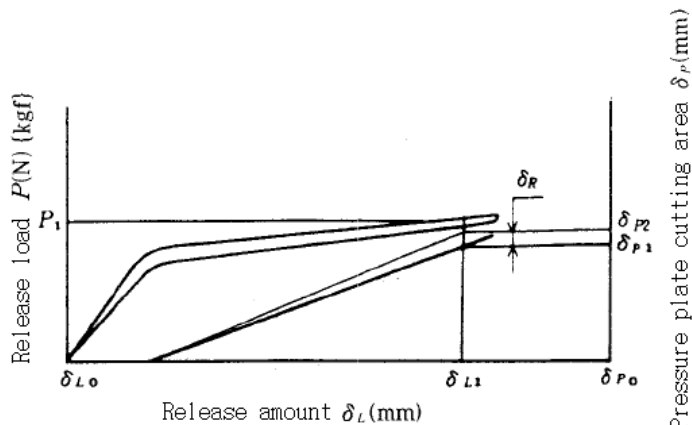


Fig. 4

b) Test shall be made as follows:

- 1) Affix a specimen on the measurement jig with a bolt or another method, press the specimen up to the maximum allowable release stroke, and then measure the release.
- 2) Press the release lever or a the release lever plate up to the maximum allowed release stroke, and read and record P , δ_L and δ_P . Then let the lever or the plate return to its original position, and read and record P , δ_L and δ_P .

c) The release property is indicated as δ_{L1} , δ_{P1} and δ_R for P_1 , or P_1 , δ_{P1} and δ_R for δ_{L1} . Measurement shall be made at more than three points. The indicated value of P shall be read and recorded. Examples are illustrated in **figs. 5-1 and 5-2**.



Where,

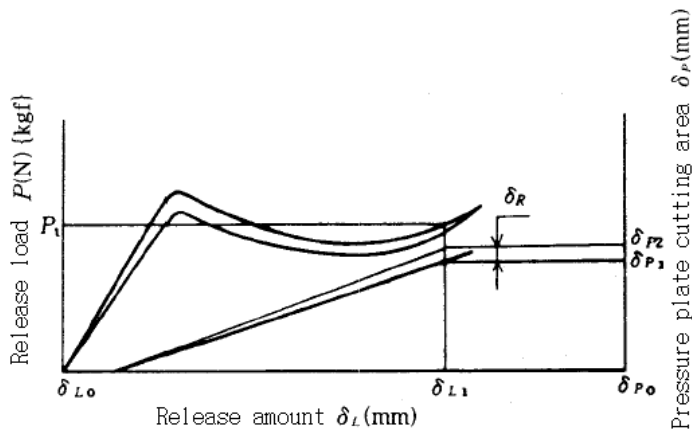
δ_{L1} : Release amount for P_1

P_1 : Release load for δ_{L1}

δ_{P1} : Minimum pressure plate cutting area for P_1

δ_{P2} : Maximum pressure plate cutting area for P_1

δ_R : ($\delta_{P2} - \delta_{P1}$)



Where,

δ_{L1} : Release amount for P_1

P_1 : Release load for δ_{L1}

δ_{P1} : Minimum pressure plate cutting area for P_1

δ_{P2} : Maximum pressure plate cutting area for P_1

δ_R : ($\delta_{P2} - \delta_{P1}$)

Fig. 5-2

7.5 Rotation and destruction test : The test method shall be determined upon agreement between concerned parties.

8. Structure and performance specifications

8.1 Structure specifications : The structure specifications shall be as follows:

8.1.1 Classes : Clutch covers are classified into types listed in **table 1** dependent upon spring appearance, drive mode and flywheel appearance: