

Clutch disk assemblies for automobiles

1. Scope

This standard covers dry, single-plate clutch disk assemblies for automobile (hereinafter referred to as clutch disks). Motorcycles are not included within the scope of this standard.

Remarks: In this standard, units and numerical values given in { } are conventional units, shown for reference.

1. Purpose

This standard has been established for the purpose of standardizing clutch disks, promoting rationalization, and preserving proper quality.

2. Classification

Clutch disks are classified by the presence of a shock absorbing device in rotating and axial directions and by shape as shown in **Table 1**.

Table 1

Classification by rotating direction shock absorber	Classification by axial direction shock absorber	Abbreviation	Remarks
Solid type	Rigid type	SR	See Appended Fig. 1*
	Plate cushion type	SP	See Appended Fig. 2*
	Separate cushion type	SS	See Appended Fig. 3
	Console cushion type	SC	See Appended Fig. 4*
Spring type	Rigid type	CR	See Appended Fig. 5*
	Plate cushion type	CP	See Appended Fig. 6
	Separate cushion type	CS	See Appended Fig. 7
	Separate cushion type	CC	See Appended Fig. 8
Rubber type	Rigid type	RR	See Appended Fig. 9*
	Plate cushion type	RP	See Appended Fig. 10
	Separate cushion type	RP	See Appended Fig. 11
	Separate cushion type	RC	See Appended Fig. 12

Remarks: 1. The solid type is a disk without a shock absorber in the rotating direction.

2. Abbreviation indicating method: Suffix applicable facing outside diameter to the abbreviation as follows:

CS-200: Indicates spring form, segment cushion type with 200 mm outside diameter facing.

3. The * mark in the Remarks column in **Table 1** indicates that the product is not in current use.

4. Names and materials of main component parts

The names and materials of main component parts shall, as a general rule, conform to **Table 2**.

Table 2

No.	Name	Material	Reference	
			Product Hardness	Hardness Depth(mm)
1	Hub	S43C~S58C	Harden & temper H _R C18~35	—
		SCr21~22 or SCM21~22	Heat treat	—
2	Disk plate	SPC, SPH or SCM21~22	Hv 550min.	0.2min.
		SK or S-C	H _R C18~47	—
3	Sub-plate	SPC, SPH or SCM21~22	Hv 400min.	0.1min.
		SK or S-C	H _R C18~47	—
4	Facing	Conform to JISD4311	—	—
5	Cushion plate	SK5~7	Hv 345~590	—
6	Torsion spring	SWP, SWOCV-V or SWOSC-V	—	—
		Rubber	—	—
7	Friction spring	SK5~7	Hv 345~590	—
8	Friction plate	SPC or SPH	Hv 400min.	0.1min.
9	Friction washer	SPC or SPH	—	—
		Fiber or asbestos product	—	—
10	Stopper pin	SV, SS or S-C	H _R B 97max.	—
11	Stud pin	SV, SS or S-C	H _R B 97max.	—
12	Facing rivet	BsW1~2	—	—
		SWRM or SV	—	—
13	Cushion plate rivet	SWRM or SV	H _R B 95max.	—
14	Hub rivet	SWRM or SV	—	—
15	Torsion spring washer	SPC or SPH	Hv 400min.	0.1min.

Remark: 1. Materials shall conform to following JIS.

S-C to **JIS G4051** SK to **JIS G4401** BsW to **JIS H3521**
 Scr to **JIS G4104** SWP to **JIS G3522** SV to **JIS G3522**
 SCM to **JIS G4105** SWRM to **JIS G3505** SS to **JIS G3101**
 SPC to **JIS G3141** SWOSC-V to **JIS G3566**
 SPH to **JIS G3131** SWOCV-V to **JIS G3565**

2. Item Nos. are related to those in **Appended Fig. 1-12**.

Normative references: Refer to Page 9.

Old standard: JASO 6407

5. Principal dimensions

5.1 Facing dimensions

Facing dimensions and tolerances are shown in **Table 3**.

Table 3

Unit: mm

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

Remarks: Sizes shown within parenthesis should not be used if possible. Sizes within parenthesis are the same as those within parenthesis in **JIS D4311**. Sizes within double parenthesis are not included in **JIS D4311**.

5.2 Splines

5.2.1 Involute splines

Splines shall be involute type or straight-sided type and shall be as follows.

(1) Those conforming to **JIS D2001** 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 dimension	*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			
No. of teeth					*50/28			
					*43.333/24			

Remarks: 1. Tolerances shall conform to **JIS D2001**.

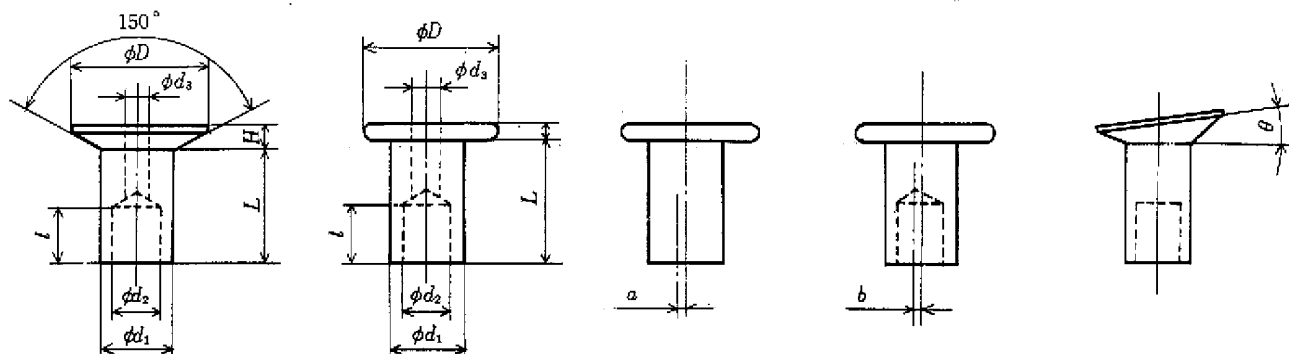
2. Values indicated by the *mark are not in current use.

5.3 Facing rivets

Facing rivet dimensions are as shown in **Table 10**.

Table 10

(1) Countersunk tubular rivet (2) Flat tubular rivet (3) Shank to head off-center (4) Tubular hole off-center (5) Seat tilt



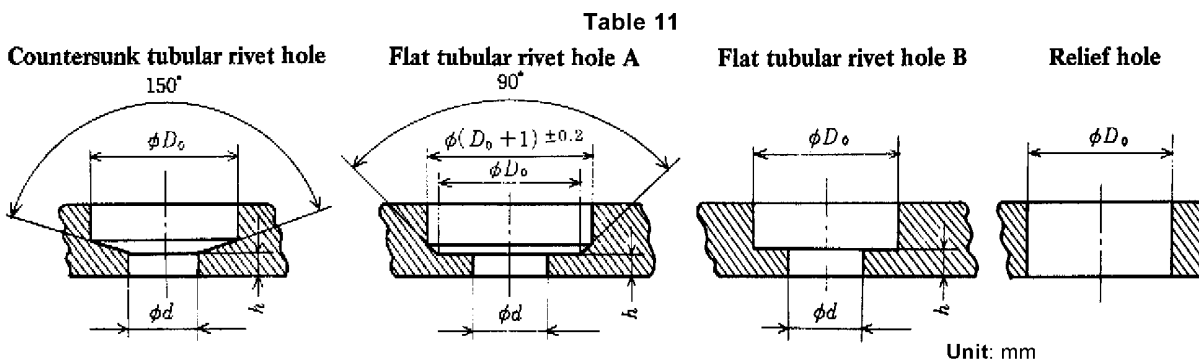
Unit: mm

Symbol		Nominal diameter			Tolerance
		4.0	5.0	6.0	
Shank diameter d_1		4.0	5.0	6.0	±0.1
Head diameter D	Countersunk rivet	8.0 8.5 (9.0)	(8.5) 9.0 9.5 (10.0)	8.5	±0.25
	Flat rivet	7.5 8.5	9.0 9.5 (10.0)	—	
Head height H	Countersunk rivet	1.0 1.0	1.3 (1.0)	1.5	0 −0.20
	Flat rivet	0.7	0.7 1.0	—	
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			
Length under head L		6.0			
		3.5 4.0	5.0		
		4.5 5.0	5.5		
		5.5 6.0	6.0		
		6.5 7.0	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		
Shank to head off-center a		0.1 max.	0.15 max.		
Tubular hole off-center b		0.1 max.			
Seat tilt θ		2.0 max.			

Remarks: Use of sizes within parenthesis should be avoided.

5.4 Facing rivet holes

Dimensions of facing rivet holes are shown in **Table 11**.



Symbol		Nominal diameter			Tolerance
		4.0	5.0	6.0	
Hole diameter	d	4.2	5.2	6.2	+0.2 0
Hole depth	h	1.0 1.5	1.5 2.0	1.5 2.0	+0.2 0
Counter-sunk hole diameter D_0	Counter-sunk rivet	8.5 9.0 (9.5)	9.0 9.5 10.0 (10.5)	9.0	+0.5 0
	Flat rivet	8.0 9.0	9.5 10.0 (10.5)	—	

Remark: Use of values within parenthesis should be avoided.

5.5 Clutch disk main dimension tolerances

Clutch disk main dimension tolerances are shown in **Table 12**.

Table 12

Item	Tolerance	Remarks
Assembled thickness	For outside diameter 300mm or less, $\pm 0.4\text{mm}$ max. against TA.	(1) TA = Assembled thickness (T+0.2mm) (2) T = Sum of facing thickness, cushion plate height, and disk plate thickness basic values. (3) 0.2mm is the swelling of the cushion plate when rivetted and the clearance when facings and clutch plate are assembled.
	For outside diameter exceeding 300mm, $\pm 0.4.5\text{mm}$ max. against TA.	
Horizontal runout	For outside diameter 300mm or less, 0.8mm max. For outside diameter exceeding 200mm and less than 300mm, 1.0mm max. For outside diameter exceeding 300mm, 1.3mm max.	—
Vertical runout	For outside diameter 300mm or less, 1.0mm max. For outside diameter exceeding 300mm, 1.5mm max.	—
Flatness	For outside diameter 300mm or less, 0.4mm max. For outside diameter exceeding 300mm, 0.5mm max.	—
Imbalance	M shall not exceed $110 W^{2/3}$. When W is 1 kg or less, M shall not exceed 100gmm.	Where M: Imbalance (gmm) W: Rotating body weight (mass) kg

6. Characteristics test method

6.1 Assembly Accuracy measuring method

6.1.1 Assembly thickness

For assembly thickness, measure the thickness at the frictional surface part with a plate gauge.

6.1.2 Horizontal runout

For horizontal runout, take the spline as the basis, and measure the runout near the periphery (within $\frac{D_o - D_1}{4}$ from the outer edge) on the flywheel side.

(See Fig. 1).

Fig. 1

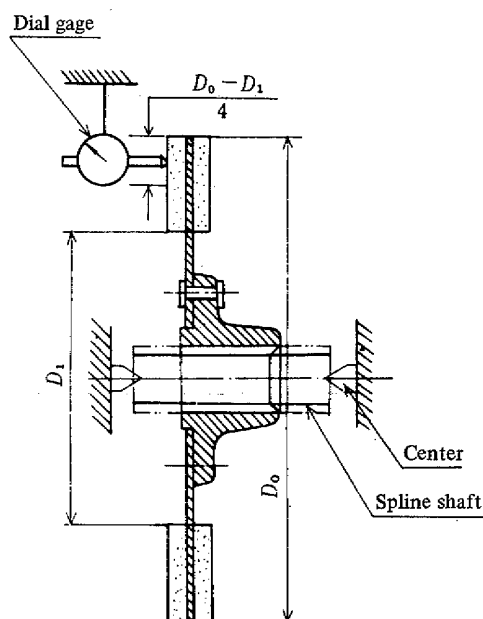


Fig. 2

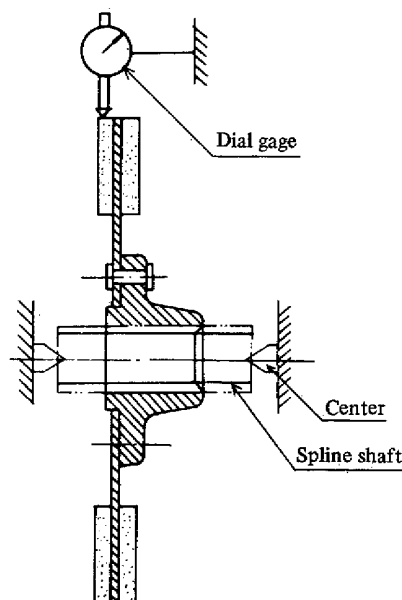
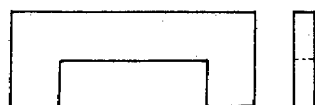
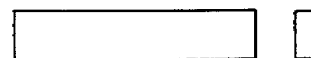


Fig. 3

Straight rule with relief



Straight rule



6.2 Imbalance measuring test

Test methods shall be determined by the parties concerned.

6.3 Torsional characteristic test

Torsional characteristic tests shall be done as follows.

(1) The tester shall possess the following functions. A typical tester is shown in Fig. 4.

6.1.3 Vertical runout

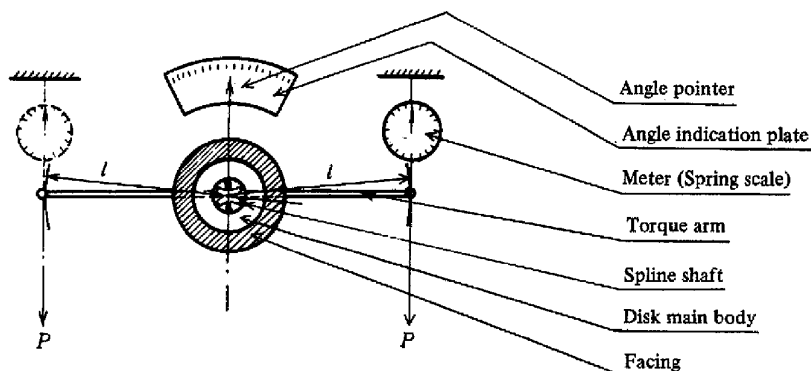
For vertical runout, take the spline as the basis, and measure by placing a dial gauge against the maximum periphery. (See Fig. 2).

6.1.4 Flatness

For flatness, place a plane rule or straight rule against the friction surface at the flywheel side as shown in Fig. 3 and measure at several random places with thickness gauge.

- (a) Be capable of completely holding the facing.
- (b) Length ι shall not change when P is acting.
- (c) ι shall, as general rule, should be 1.0 or 0.5m.
- (d) P may be affected either manually or automatically.
- (e) The angle pointer shall be capable of clearly indicating spline shaft rotational change (Unit: radians).

Fig. 4



(2) The test shall be performed as follows:

- Mount the specimen, and measure after operating several times to the maximum torsional angle.
- Rotate the spline shaft, and while recording P at various angles, rotate to the maximum torsional angle. From this point, rotate back toward the initial point while again recording P at various angles.

(3) Calculate the torque from the following equation.

$$T = P \cdot l$$

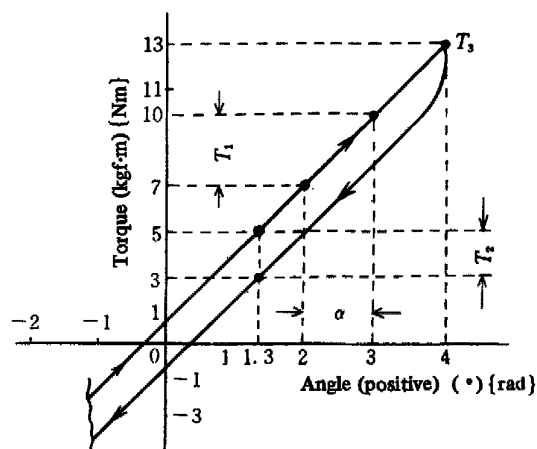
where T : Torque (Nm) {kgf·m}

P : Load at various angles (N) {kgf}

l : Torque arm length (m)

(4) Characteristics shall be as follows. Typical characteristics are shown in Fig. 5.

- Maximum torque/angle (positive, negative)
- Torque at specified torsional angle (positive, negative)
- Torsional rigidity (positive, negative)
- Hysteresis torque (positive, negative)



Where Maximum torsional angle

Example 0.07 rad {+4°}

$\frac{T_1}{a}$: Torsional rigidity

Example $1.7 \times 10^3 \text{ Nm/rad}$ {3.0kgf·m/°}

T_2 : Hysteresis torque

Example 1.96Nm/at 0.023rad

{2.0kgf·m/at 1.3°}

T_3 : Maximum torque

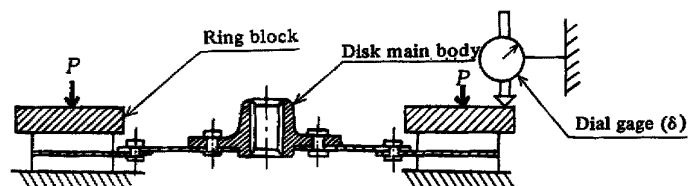
Example 127 Nm {+13.0kgf·m}

6.4 Surface compression characteristic test

The surface compression characteristic test shall be performed as follows:

- The tester shall, as shown in Fig. 6, press down with the load P acting in the direction perpendicular to the facing surface, and be capable of measuring P and δ .

Fig. 6

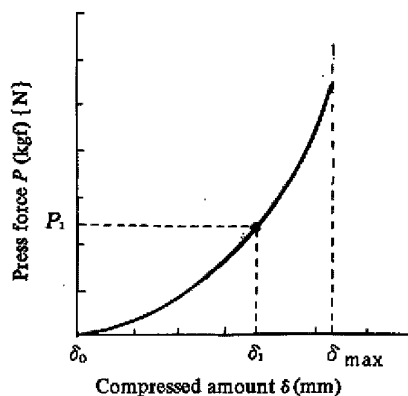


(2) Test procedures are as follows:

The test specimen is pressed level on the frictional surface by the tester, and as shown in Fig. 6, after fully compressing once by P , P and δ are measured and recorded. If a ring block is used, its weight (mass) shall, as a general rule, be added to P .

(3) Surface compression characteristics shall be expressed in terms of P_1 against δ_1 , or δ_1 against P_1 . A typical example is shown in Fig. 7.

Fig. 7



Where δ_{max} : Totally compressed amount
 δ_1 : Compressed amount against P_1
 P_1 : Load against δ_1
 δ_0 : Compressed amount = 0 (Free thickness)

6.5 Rotational destructive test

The test method shall be determined by the parties concerned.

7. Construction and performance specifications

7.1 Construction specifications

7.1.1 Classification

Classified by rotating direction shock absorber and axial direction shock absorber as shown in **Table 1**.

7.1.2 Dimensions

- (1) Facing dimensions: Outside diameter x inside diameter x one plate thickness (mm x mm x mm)
- (2) Thickness: Assembly thickness or thickness at designated load (mm)
- (3) Spline dimensions
- (4) Spline hub length: Expressed as the amount protruding from the flywheel side and from the facing side, with the flywheel side facing surface taken as the basis. (mm)
- (5) Torsion ring protrusion: Amount protruding from the flywheel side and the facing side. (mm)

7.1.3 Weight (mass) (kg)

7.1.4 Moment of inertia ($\text{kg} \cdot \text{m}^2$) { $\text{kgf} \cdot \text{cm} \cdot \text{s}^2$ }

7.2 Performance specifications

7.2.1 Torsional characteristics

- (1) Maximum torque (Nm) { $\text{kgf} \cdot \text{m}$ }
- (2) Torque at specified torsion angle (Nm) { $\text{kgf} \cdot \text{m}$ }
- (3) Torsional rigidity (Nm/rad) { $\text{kgf} \cdot \text{m}/^\circ$ }
- (4) Hysteresis torque (Nm) { $\text{kgf} \cdot \text{m}$ }

7.2.2 Surface compression characteristics

Deflection at specified load.

7.2.3 Destructive rpm

Conditions shall be determined by the parties concerned.

7.2.4 Durability

Conditions shall be determined by the parties concerned.

8. Inspection

8.1 Inspections items

- (1) Appearance inspection
- (2) Material inspection
- (3) Dimensional inspection
- (4) Torsional characteristics inspection
- (5) Surface compression characteristics inspection

8.2 Appearance inspection

Clutch disks shall present a well finished appearance and shall be substantially free from marks, rust, humps, warping, blisters, admixture of impurities, excessive discoloration, and other defects.

8.3 Materials inspection

Materials shall conform to the requirements in **4**.

8.4 Dimensional inspection

Dimensions shall conform to the requirements in **5**.

8.5 Torsional characteristics inspection

Torsional characteristics shall be measured in accordance with **6.4**, and the test results shall conform to the requirements agreed to by the parties concerned.

8.6 Surface compression characteristics test

Surface compression characteristics shall be tested in accordance with **6.4**, and the test results shall conform to the requirements agreed to by the parties concerned.

9. Markings

The manufacture's name or mark and the manufactured year and month shall be clearly and durably marked on the clutch disk.

Normative references:

JIS B 1601	Straight sided splines	JIS G 3565
JIS D 2001	Involute splines, Automobiles	JIS G 3566
JIS D 4311	Clutch Facings for Automobiles	JIS G 4051
JIS G 3101	Rolled Steel for General Structure	JIS G 4104
JIS G 3104	Rolled Steel for Rivet	JIS G 4105
JIS G 3131		JIS G 4401
JIS G 3141		JIS H 3521
JIS G 3505		SAE J 498b
JIS G 3522		DIN 5480

(2) Those conforming to **SAE** are shown in **Table 5**.

Table 5

Unit: mm

DP	Nominal diameter/No. of teeth						
10/20	27.94	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. Tolerances shall conform to **SAE**.

2. Values indicated by the *mark are not in current use.

(3) Those conforming to **DIN** are shown in **Table 6**.

Table 6

Unit: mm

Module	Nominal diameter/ No. of teeth	
1.00	25/24	20/18

Remark: Tolerances shall conform to **DIN**.

5.2.2 Straight-sided splines

(1) Those conforming to **JIS B1601** are as shown in **Table 7**.

Table 7

Unit: mm

No. of grooves	Root diameter	Inside diameter	Groove width
*6	*20	*16	*4
8	42	36	7

Remarks: 1. Tolerances shall conform to **JIS B1601**.

2. Values indicated by the *mark are not in current use.

(2) Those conforming to **SAE** are shown in **Table 8**.

Table 8

Unit: mm

No. of grooves	Root diameter	Inside diameter	Groove width
10	25.502	20.540	3.912
	*28.702	*23.114	*4.419
	41.25	33.40	6.4

Remarks: 1. Tolerances shall conform to **SAE**.

2. Values indicated by the *mark are not in current use.

(3) Straight-sided splines that are not applicable to **JIS**, **SAE**, or **DIN** shall be as shown in **Table 9**.

Table 9

Unit: mm

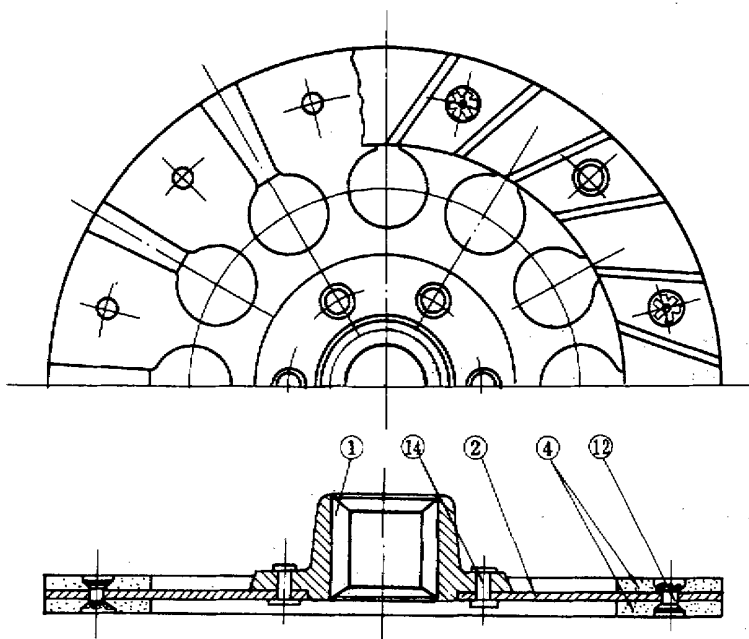
No. of grooves	Root diameter	Inside diameter	Groove width
10	*22.51	*18.23	*3.43
	23.88	19.20	3.696
	29.007	23.950	4.521
	35.13	28.65	5.4
	38.075	32.741	5.893
	45.00	36.00	5.0
	*52.00	*42.00	*6.0

Remarks: 1. Should not be used in new designs.

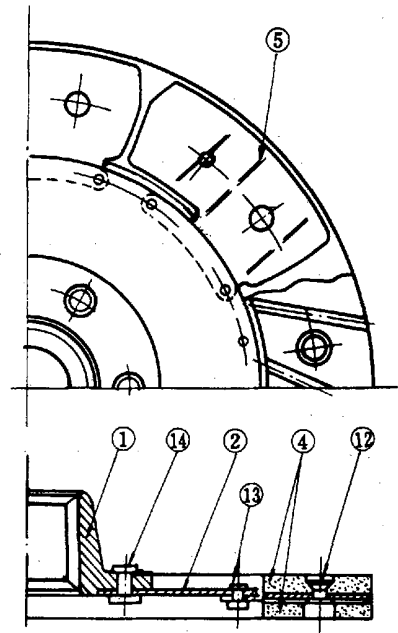
2. Tolerances shall be determined by the parties concerned.

3. Values indicated by the *mark are not in current use.

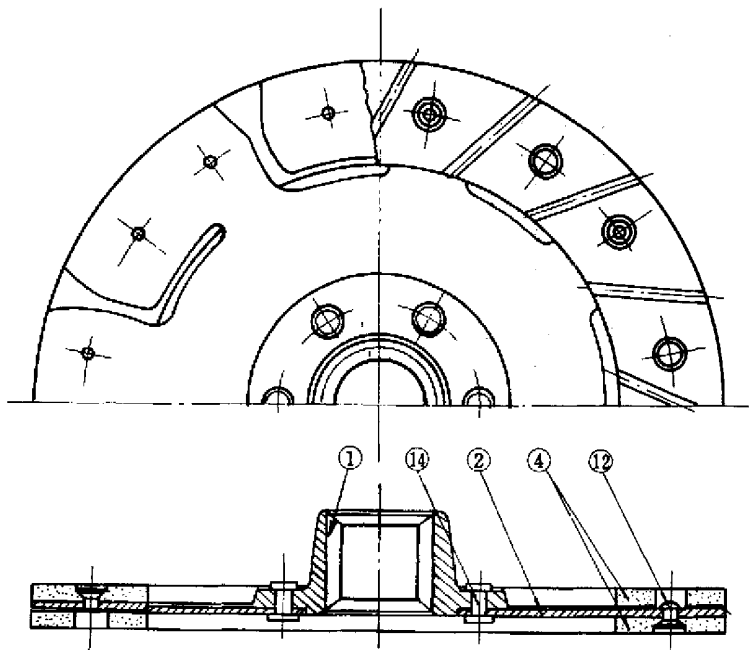
Appended Fig. 1
SR



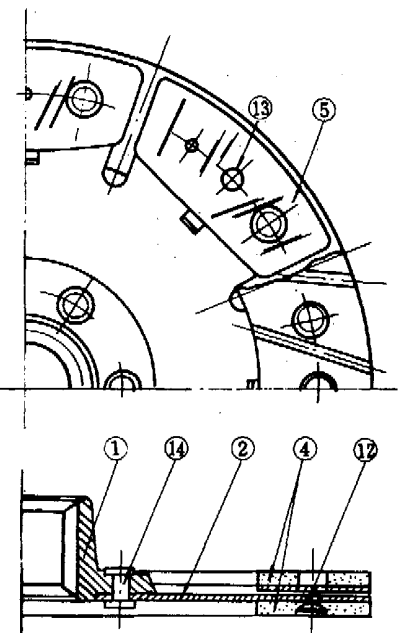
Appended Fig. 3
SS



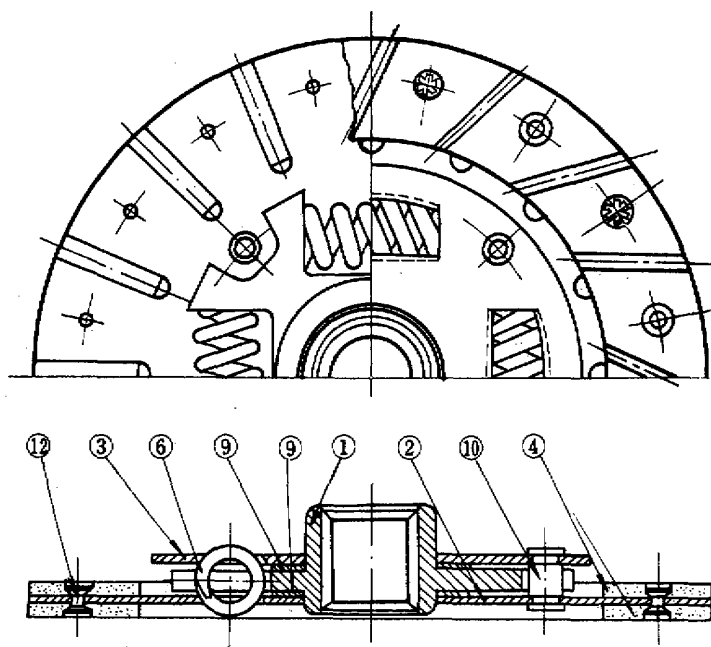
Appended Fig. 2
SP



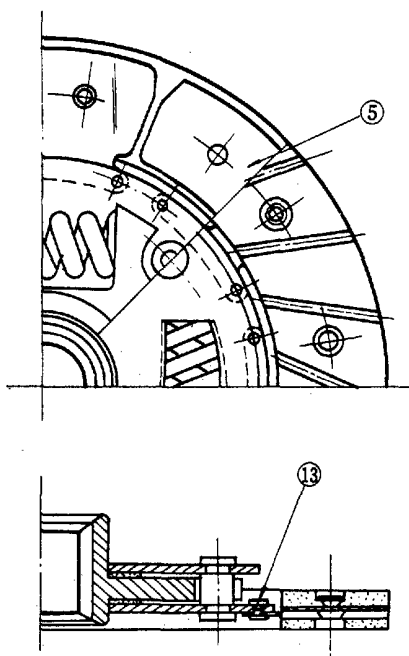
Appended Fig. 4
SC



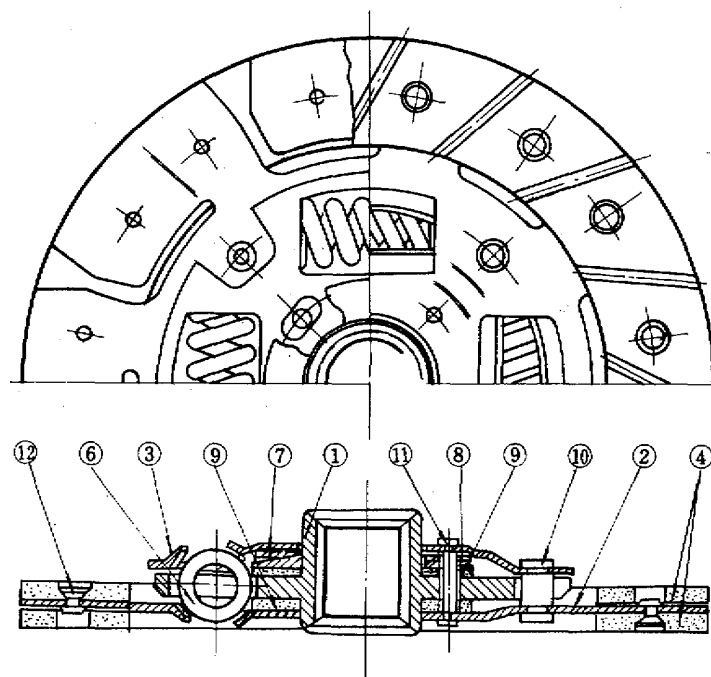
Appended Fig. 5
CR



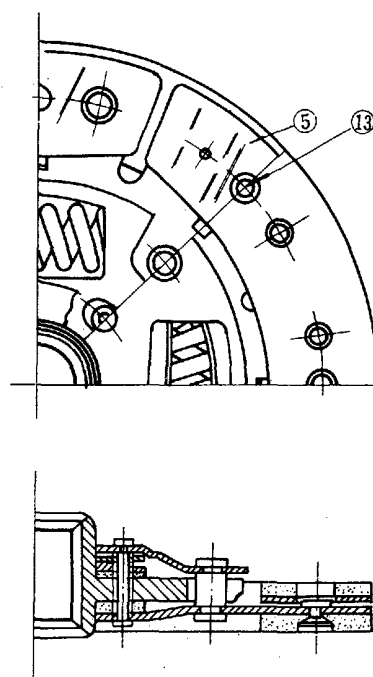
Appended Fig. 7
CS



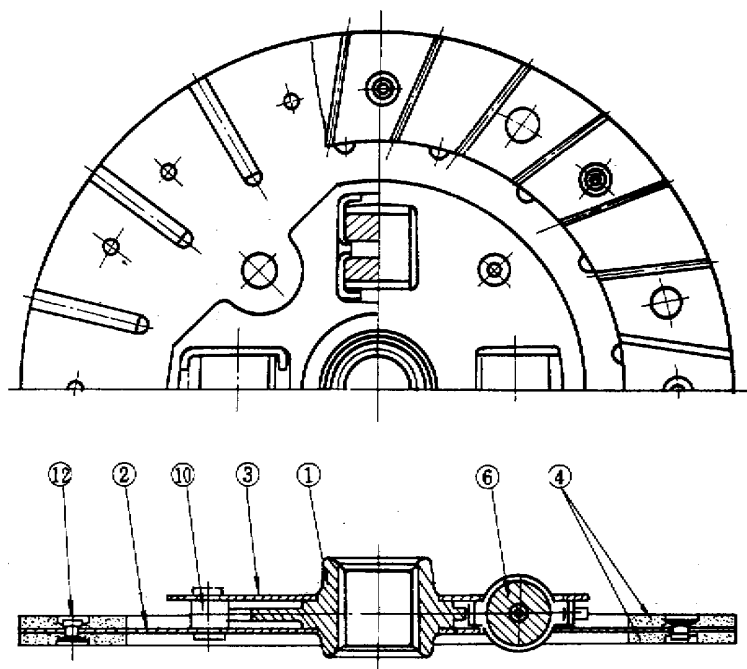
Appended Fig. 6
CP



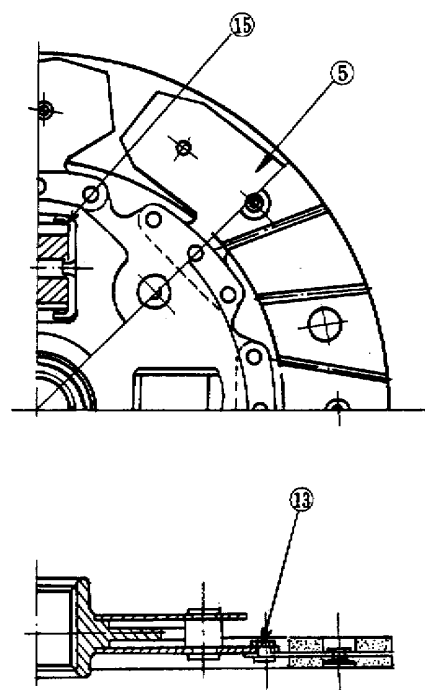
Appended Fig. 8
CC



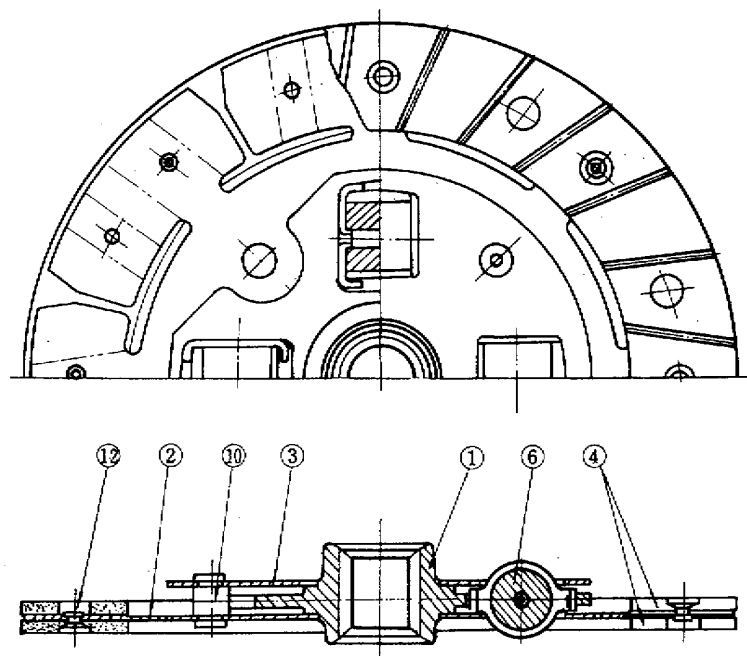
Appended Fig. 9
R R



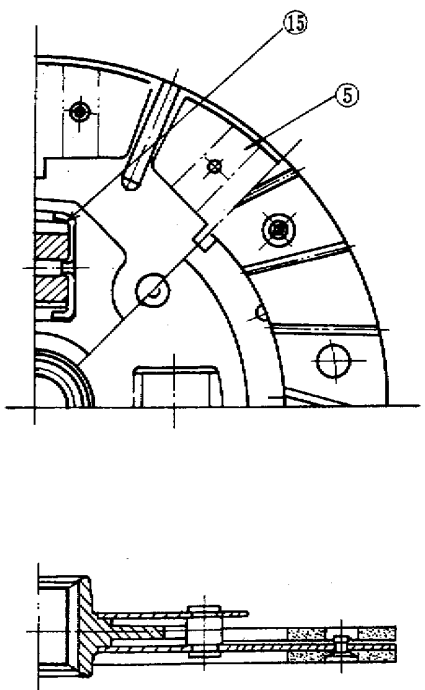
Appended Fig. 11
R S



Appended Fig. 10
R P



Appended Fig. 12
R C



Explanatory Notes for JASO C102-89 Clutch disk assemblies for automobiles

Introduction

This standard was issued as **JASO 6407-72** (Clutch disk assemblies for automobiles) on Oct. 2, 1964 and revised on June 15, 1972. It was revised over the course of five deliberations into the present form for current and future use. (The following item numbers are the same as those in the main text.)

3. Classification

Those that are not in use at present and which have been recognized as objects for future discontinuance have been shown by the * mark in the Remarks column and should be avoided in new designs.

4. Name and materials of main component parts

4.1

Due to a survey showing extensive current usage, and considering future use, SWO-SC-SC have been newly added as a torsion spring material and S-C as a stopper pin and stud pin material. The stopper pin and stud pin product hardness has been raised from HRB 95 minimum to HRB 97 minimum.

4.2

Item No. had been left out in Appended **Fig. 11** and **12**. This has been added as Item No. 15.

5. Main dimensions

5.1 Facing dimensions

(1) Dimensions that are not in **JIS D 4311** but which are generally in use at present and cannot be discontinued for the time being have been added and shown enclosed with double parenthesis. Corrections were also made.

(a) Addition to **JIS D 4311**

(Outside diameter) x (Inside diameter) 236 x ((165))
((255))x((170))

(b) Correction

(Thickness) ((5.0)) against outside diameter 457 changed to ((5.5)).

5.2 Spline

(1) A survey on actual usage showed that some splines are still popular and others are not. Based on this, additions and deletions were made to **JASO 6407** (Clutch disk assemblies for automobiles).

(a) Addition to **Table 9**.

(Base diameter) x (Inside diameter) x (Groove width) 35.13 x 28.65 x 5.4

(b) Deletion to **Table 9**.

(Base diameter) x (Inside diameter) x (Groove width) 29.007 x 23.495 x 4.52

Those which are not in use today and can be discontinued in the future have been indicated with the * mark. Consequently, their use should be avoided whenever possible in new designs.

5.3 Facing rivet

A survey on actual usage showed that facing rivets with a nominal diameter of 3.7 re no longer in use and were therefore deleted from **Table 10**.

5.4 Facing rivet hole

The discontinuance of nominal diameter 3.7 facing rivet required the discontinuance of the nominal diameter 3.7 hole in **Table 11**.

5.5 Clutch disk main part tolerance

(1) Horizontal runout tolerances were generally too loose for clutch release reserve. Upon investigating the parts manufacturers' capacities, tolerances of 1.0mm for outside diameters of 250mm and less, and 1.3mm for outside diameters exceeding 250mm, were revised to 0.8mm for outside diameters 200mm and less, 1.0mm for outside diameters of from 200mm to 300mm, and 1.3mm max. for outside diameters exceeding 300mm. The outside diameter for vertical runout and flatness were revised from 250mm to 300mm.

(2) To clarify the amount of imbalance, the expression, "when M is 100mm or less" was changed to "when W is 1 kg or less".

6. Characteristics test method

6.2 Imbalance measuring test

Consideration that the imbalance measuring tests show specified concrete rotating speed were discarded due to the differences in the testers currently in use. It was deleted from **6.2** and is applicable at the discretion of the parties concerned.

6.3 Torsional characteristic test

For the purpose of conforming to actual conditions, the expressions in (4)

(a) Maximum torsional angle (positive, negative) and (b) Maximum torque (positive, negative) were made to conform with expressions in **7.2.1**.

6.4 Surface compression characteristic test

It was decided that the weight (mass) of the ring block does not necessarily have to be added to P. Thus, (2) was revised from "when ring block is used..." to "when ring block is used, the general rule shall be..."

On Normative references **JIS G 3566** (Oil tempered chromium silicon alloy steel valve spring quality wire) was added due to the inclusion of SWOSC-V in **Table 2** Torsion spring material.

Explanatory Notes Table Spline principal values (in actual use) classified by facing outside and inside diameters

Facing dimensions (mm)		Spline principal values					
Outside diameter	Inside diameter	Type	Major (mm) diameter	Minor (mm) diameter	No. of teeth or grooves	Module (D.P.) or groove width	Pressure angle
150	110	Involute	19	17	18	1.0	30°
		"	19.14	17.04	"	"	20°
		"	20.48	18.258	24	32/64	30°
		"	25.6	23	"	1.0	"
160	110	Involute	19.4	17.08	18	1.0	20°
		"	20.48	18.258	24	32/64	30°
		"	20.6	18	18	1.0	"
		"	25.6	23	24	1.0	"
165	110	Involute	18	16	16	1.0	20°
180	125	Involute	21.6	19.05	19	24/48	30°
		"	22.225	20.109	20	"	"
		"	25.6	23	24	1.0	"
184	137	Involute	22.35	19.9	20	24/48	30°
190	132	Involute	20	18	19	1.0	37°30'
		"	23.8	21.166	21	4/48	30°
		"	25.6	23	24	1.0	"

Facing dimensions (mm)		Spline principal values					
Outside diameter	Inside diameter	Type	Major (mm) diameter	Minor (mm) diameter	No. of teeth or grooves	Module (D.P.) or groove width	Pressure angle
200	130	Involute "	22.35 25.6	19.9 23	20 24	24/48 1.0	30° "
	140	Involute	20	16.7	10	1.667	20°
200, 212	140	Involute	28.8	25.5	21	20/40	30°
212	150	Involute	25	22.5	18	1.25	20°
215	140	Involute	20	16.7	10	1.667	20°
	150	Involute "	24.34 25	22.225 21.7	22 13	24/48 1.667	30° 20°
224	150,160	Involute	28.8	25.5	21	20/40	30°
225	145						
	150	Involute "	25 25.6	21.7 23	13 24	1.667 1.0	20° 30°
236	150	Involute	28.8	25.5	21	20/40	30°
	165	Involute	25.6	23	24	1.0	30°
240	150						
	160	Straight-sided	25.502	20.549	10	3.912	—
250	160	Involute	25.6	23	24	1.0	30°
255	170	Involute	28.8	25.5	21	20/40	30°
260	170	Involute	28	24	12	2.0	20°
		Straight-sided	25.502	20.549	20	3.912	—
		"	29.5	23.9	"	4.53	—
275	175	Involute	27.94	22.86	10	10/20	30°
		Straight-sided	29.05	23.9	10	4.53	—
		"	35.13	28.65	10	5.4	—
300	180	Involute	28	24	12	2.0	20°
325	190	Involute	30	26.7	16	1.667	20°
	200	Involute	27.94	22.86	10	10/20	30°
350	220	Involute	45	40	16	2.5	20°
		Straight-sided	38.075	32.741	10	5.893	—
380	220	Involute	45	40	16	2.5	20°
		Straight-sided	42	36	8	7	—
400	250	Involute	42	36	12	3.0	20°
410	250	Involute	38.71	33.02	14	10/20	30°
		Straight-sided	41.25~ 41.285	33.40~ 33.44	10	6.40~6.45	—
430	250	Involute	42	36	12	3.0	20°
		"	45	40	16	2.5	20°
457	280	Straight-sided	41.25~ 41.285	33.40~ 33.44	10	6.40~6.45	—

Other

A proposal to standardize the currently used spline principal values against the various facing outside diameters was presented by the Automotive Parts Industry Association, together with their strong recommendation that it be standardized. The sectional committee concluded that these current values cannot be directly adopted as a standard at the present stage, however, this data is referenced in "Spline principal values (current values) for various facing outside diameters". We recommend that these actually used values be reviewed and standardized in the future.