

YPES-11-05-039

S タイプ コネクタ

製品規格

PRODUCT STANDARD

FOR

S TYPE CONNECTOR

矢崎総業株式会社

矢崎部品株式会社

改訂年月日 2014年04月16日

1. 適用範囲

本規格は、自動車の低圧回路に使用する S タイプコネクタについて規定する。

2. 種類、部品符号、品番及び適用電線サイズ。

次頁の表-1 及び 2 のとおりとする。

1) 端子

表-1

区 分	符 号	品 番	電 線 サ イ ズ	備 考
オス	SM	7114-1230	AV (S) 0.3 ~0.5	(TIN PLATING)
		-1231	AV (S) 0.85~2.0	
	SM-AU	7114-1230-08	AV (S) 0.3 ~0.5	(GOLD PLATING)
		-1231-08	AV (S) 0.85~2.0	
	SM-H	7114-1238	AV (S) 0.3 ~0.5	Sへビー (TIN PLATING)
		-1239	AV (S) 0.85~2.0	
メス	SF	7116-1230	AV (S) 0.3 ~0.5	(TIN PLATING)
		-1231	AV (S) 0.85~2.0	
	SF-AU	7116-1230-08	AV (S) 0.3 ~0.5	(GOLD PLATING)
		-1231-08	AV (S) 0.85~2.0	
	SF-H	7116-1342	AV (S) 0.3 ~0.5	Sへビー (TIN PLATING)
		-1343	AV (S) 0.85~2.0	

2) ハウジング及びリヤホルダ

表-2

オスハウジング			メスハウジング		
符 号	ハウジング品番	リヤホルダ品番	符 号	ハウジング品番	リヤホルダ品番
S01MW	7122-1610	7157-6010-70	S01FW	7123-1610	オスと共用
S01ML	-1619-90	-6010-90	S01FL	-1619-90	↑
S02MW	-1620	-6020-70	S02FW	-1620	↑
S02ML	-1629-90	-6022-90	S02FL	-1629-90	7157-6023-90
			↑	↑	-6025-90
S02ML-B	-1629-30	-6022-30	S02FL-B	-1629-30	-6023-30
S02MB	-1623-30	-6024	S02FB	-1623-30	オスと共用
S02MG	-1626-60	-6027-50	S02FG	-1626-60	オスと共用
			S02FGY	-1624-40	-6029-30
S03MW	-1630	-6030-70	S03FW	-1630	↑
S03ML	-1639-90	-6032-90	S03FL	-1639-90	7157-6033-90

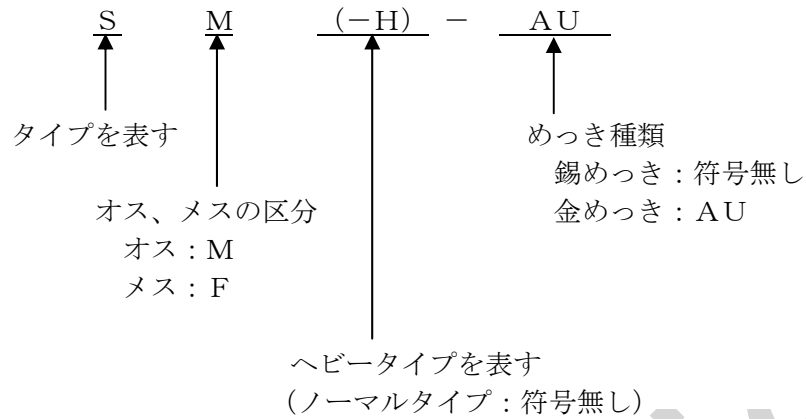
オスハウジング			メスハウジング		
符 号	ハウジング品番	リヤホルダ品番	符 号	ハウジング品番	リヤホルダ品番
S04MW	-1640	-6040-70	S04FW	-1640	オスと共用
			S04FW-OR	-1640-50	-6040-70
S04ML	-1649-90	-6242-90	S04FL	-1649-90	↑
S06MW	7122-1660	7157-6060-70	S06FW	7123-1660	オスと共用
S06ML	-1669-90	-6062-90	S06FL	-1669-90	7157-6063-90
S08MW	-1680	-6080-70	S08FW	-1680	↑
S08ML	-1689-90	-6082-90	S08FL	-1689-90	7157-6083-90
			S08FL-Z	-1689-30	-6184-90
S08MB	-1683-30	-6084	S08FB	-1683-30	-6085
S08MB-P	-1687-30	-6084	S08FB	-1683-30	-6085-20
S08MB-P-Y	-1687-30	-6084			
S10MW	-1700	-6100-70	S10FW	-1700	-6101-70
S10ML	-1709-90	-6102-90	S10FL	-1709-90	-6103-90
			S10FL-G	-1709-60	-6103-90
			S10FL-BR	-1709-80	-6103-90
S12ML	-1729-90	-6122-90	S12FL	-1729-90	-6123-90
S16ML	-1769-90	-6162-90	S16FL	-1769-90	-6163-90
S16MBR	-1761-80	-6166-80	S16FBR	-1761-80	-6167-80

3. 用語の説明

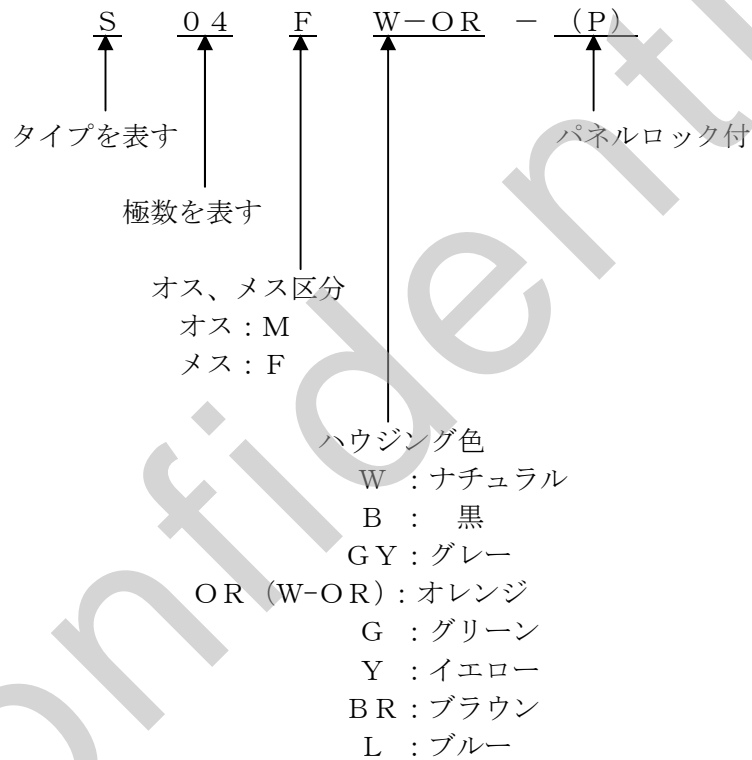
用語の意味は、この規格に付随する解説書及び「Sタイプコネクタ取扱説明書」を参照のこと。

4. 符号の説明

例－1) 端子



例－2) ハウジング



5. 構造及び材質

構造及び材質は、各部品図面の通りとする。

6. 取扱いについて

Sタイプコネクタ取扱説明書参照のこと。

7. 品質及び性能

コネクタの品質及び性能は、第8項に定める試験を行った時、表－3の通りとする。

基本性能

表-3

No.	項目	性能	試験方法
7-1	外観	有害な亀裂、ガタ、キズ、変形、変色等ないこと。	8-1
7-2	電圧降下	初期 : 3mV/A 以下 耐久試験後 : 6mV/A 以下	8-2
7-3	端子離脱力	ノーマル : 1.47~5.88N ヘビー : 5.9~11.8N	8-3
7-4	電線固着力	表-4による	8-4
7-5	漏洩電流	初期 : 10 μ A以下	8-5
7-6	絶縁抵抗	初期 : 100M Ω 以上	8-6
7-7	耐電圧	AC1000V1分間の印加に耐えること。	8-7
7-8	温度上昇	初期ノーマル : 35 $^{\circ}$ C以下、ヘビー : 50 $^{\circ}$ C以下 耐久試験後ノーマル : 40 $^{\circ}$ C以下 ヘビー : 60 $^{\circ}$ C以下 使用時雰囲気温度 : 60 $^{\circ}$ C以下	8-8
7-9	コネクタ 挿入離脱力	表-5 参照	8-9
7-10	ロック強度	98N以上	8-10
7-11	端子保持力	98N以上	8-11
7-12	パネルロック 強度	98N以上	8-12

耐久環境性能

No.	項目	性能	試験方法
7-13	耐熱性	7-2, 7-4, 7-8, 7-10, 7-11を満足する。	8-2, 8-4 8-8, 8-10 8-11, 8-13
7-14	耐寒性	7-2, 7-4, 7-10, 7-11を満足する。	8-2, 8-4 8-10, 8-11 8-14

表-4

端子に固着された電線のサイズ				
0.3sq	0.5sq	0.85sq	1.25sq	2sq
58.8N以上	88.2N以上	127N以上	167N以上	245N以上

表-5

コネクタ	挿入力	離脱力
1P	53.9N以下	挿入力と同じ
2P	58.8N以下 (W は73.5N以下)	挿入力と同じ
3P	63.7N以下 (W, Bは77.42N以下)	挿入力と同じ
4P	68.6N以下 (W は82.32N以下)	挿入力と同じ
6P	78.4N以下 (W, Bは90.16N以下)	挿入力と同じ
8P	88.2N以下 (W は98N以下)	挿入力と同じ
10P	98N以下	挿入力と同じ
12P	98N以下	挿入力と同じ
16P	98N以下	挿入力と同じ

8. 試験及び測定方法

8-1) 外観

目視及び触感により行う。

8-2) 電圧降下

コネクタ又は端子のオス・メスを嵌合した状態で第6表による電圧・電流にて通電し、圧着部より、各200mm離れた点で電圧降下量が安定した後電圧降下を測定し、(第1図のY-Y間)400mmの電線抵抗分を差し引いて接触抵抗を算出する。

表-6

順序	適用	開放電圧	短絡電流
1	通常電流回路	1.3_{-0}^{+1}V	1 A
2	最大電流回路	1.3_{-0}^{+1}V	8-8に示す電流値

		1.25mm^2	$14.1 \text{m}\Omega/\text{m}$	0.5mm^2	$32.5 \text{m}\Omega/\text{m}$
2mm^2	$8.67 \text{m}\Omega/\text{m}$	0.85mm^2	$20.5 \text{m}\Omega/\text{m}$	0.3mm^2	$49.2 \text{m}\Omega/\text{m}$

・電線サイズと電気抵抗値

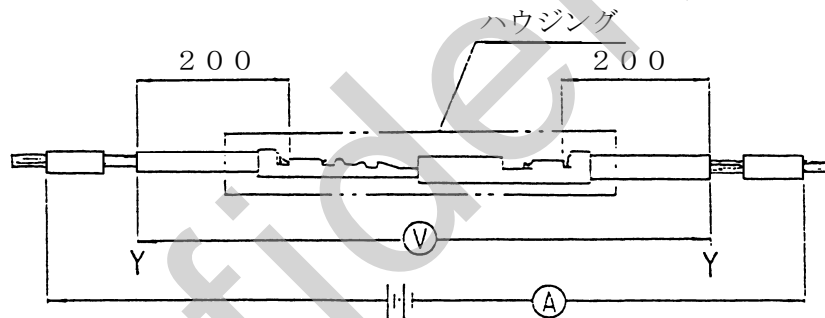


図-1

8-3) 端子離脱力

オス端子をメス端子に正規の嵌合位置まで挿入し、毎分20mmの速度で離脱し、初回の離脱力を測定する。さらに10回挿入離脱を行い、同様の測定をする。

8-4) 電線固着力

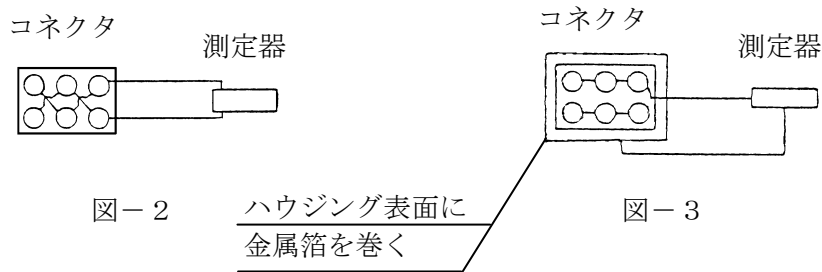
電線を圧着した端子を固定し、圧着部から50~100mmの位置より、電線を軸方向に毎分約200mmの速度で引っ張り、電線の破断又は圧着部から電線の引き抜けたときの荷重を測定する。

8-5) 漏洩電流

コネクタを嵌合した状態で、温度 $6.0 \pm 5^\circ\text{C}$ 、湿度90~95%の恒温恒湿槽内に1時間放置後、槽内に放置のまま、速やかに、隣接する端子相互間にDC 1.3_{-0}^{+1}V を加え、漏洩電流を測定する。

8-6) 絶縁抵抗

コネクタを嵌合した状態で隣接する端子相互間及び、端子とハウジング間（表面）をDC 500Vの絶縁抵抗計で、絶縁抵抗を測定する。

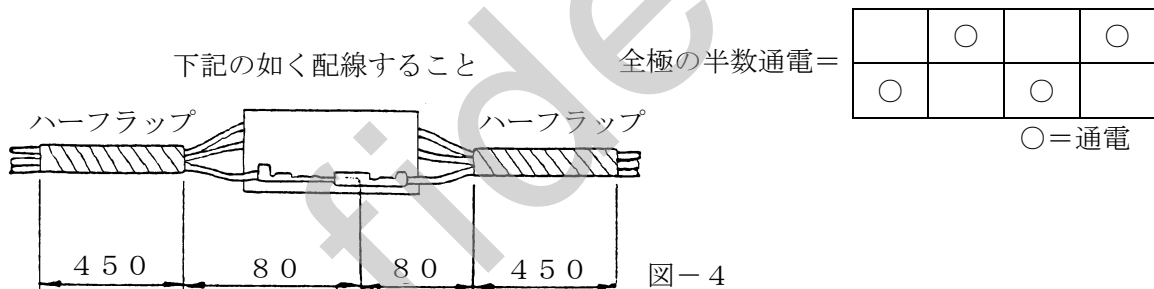


8-7) 耐電圧

コネクタを嵌合した状態で、隣接する端子相互間、及び端子とハウジング間（表面）に商用周波数の交流電圧1000Vを1分間加える。

8-8) 温度上昇

全極の半分を直列に接続したコネクタを無風室にて下記の電流を通電し、飽和温度に達した後、接触部付近の端子表面の温度を測定する。雰囲気気温は、60℃とする。
電線サイズは下記とする。



型 式	S	S-H
電 流 (A)	10	15
電線サイズ (mm ²)	AVS 1.25	AVS 1.25

8-9) コネクタ挿入離脱力

端子を組込んだハウジング、オス・メスを毎分約20mmの速度で挿入力及び離脱力を測定する。

ハウジングロック機構は、挿入の際は作用させ、離脱の際は作用させずに行う。挿入力測定時、ハウジングをホールドせずフリーの状態に挿入のこと。

8-10) ロック強度

コネクタハウジングのオス・メスを嵌合し、ハウジングロックが作用した状態でハウジングの一方を固定し、他方を軸方向に毎分約20mmの一定速度で引っ張り、ロック機構が離脱、又は破壊したときの荷重を測定する。

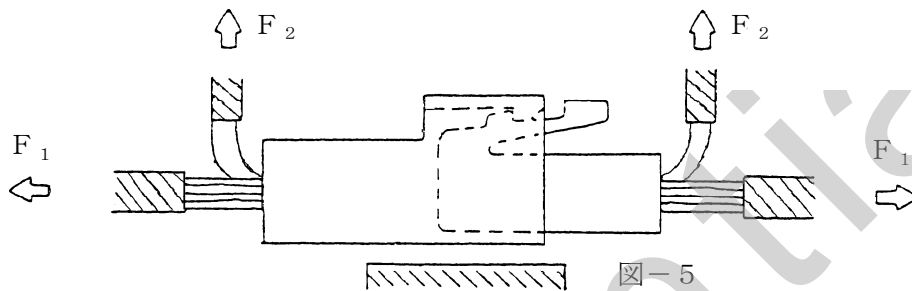
8-11) 端子保持力

ハウジングに電線を圧着した端子を組込み、ハウジングを固定し、圧着部より 50～100mm の位置より、電線を軸方向へ毎分約 200mm の一定速度で引っ張り、端子がハウジングから引抜けたときの荷重を測定する。

板厚 0.8mm、面積 100x100mm 以上の鋼板を固定し、中央に所定の穴を設ける。

8-12) パネルロック強度

端子が全極組込まれたコネクタをオス・メス嵌合し、上記の穴に固定し、電線を軸方向及び 90° 傾いた方向に毎分約 20mm の速度で引っ張り、コネクタが離脱又は、破壊したときの荷重を測定する。



8-13) 耐熱性

コネクタを嵌合した状態で 100℃ に保たれた恒温槽の中に 24 時間放置し、その後取り出して、常温に戻るまで放置する。

8-14) 耐寒性

コネクタを嵌合した状態で、 -40_{-10}^{+0} ℃ に保たれた恒温槽の中に、24 時間放置する。

「Sタイプコネクタ」の解説

1. 用語の意味

1) Sタイプコネクタ

小型 (SMALL) の略で、タブサイズ $t 0.8 \times W 2.8$ を使用するコネクタ。

2) 端子

端子とは、単体あるいはコネクタの構成部品として使用する電氣的接触片をいう。

3)ハウジング

ハウジングとは、コネクタの構成部品として使用し、端子を収容するものをいう。

4) リヤホルダ

リヤホルダとは、端子をハウジングに挿入した後に、ハウジング後部より挿入し、端子の不完全挿入を無くすために考案された部品で、プラスチックアームとリヤホルダで、端子がハウジングへ二重係止されることで、端子保持力の強化にもなる。

5) コネクタ

コネクタとは、ハウジングに端子とリヤホルダをアッセンブリしたものをいう。

2. 特 徴

本コネクタの設計で採用した、新機構・特徴について、概略を説明する。
尚、詳細は、「Sタイプコネクタ取扱説明書」を参照のこと。

1) ロック装置

本コネクタは、慣性ロックを採用している。

<慣性ロック方式>

オス・メスコネクタを嵌合するとき、ロックの反発力が、オス端子とメス端子が接触する直前に零となり、作業者の力は、慣性力となってそのまま端子挿入力に代わり、コネクタの完全嵌合が得られる。不完全嵌合状態ではオス・メスコネクタが離反、逸脱するように設計することによって、逆に作業者の完全嵌合操作を促すと共に、完全嵌合状態ではじめてロックされるようにすることにより、嵌合状態を係止確保し、常に完全な電氣的接続を図ることが目的である。

(極数限定)

2) 端子二重係止機構 (リヤホルダ方式)

1-4) にも説明したが、ハウジングに端子を挿入した後、ハウジング後部からリヤホルダを装着することにより、端子の不完全挿入を無くし、確実な係止を得ることがこの方式の目的である。プラスチックアームとリヤホルダによって端子が係止されるので、端子の保持力強化にもなる。

Confidential

本製品規格は、発行先に対し連絡無しに
改訂する場合がありますので、御了承下さい。

PRODUCT STANDARD

FOR

S TYPE CONNECTOR

~~YPSS-3410704~~
05-039
CONFIDENTIAL
~~YPSS-3410704~~

ESTABLISHED ON SEPTEMBER 28. 1987.

YAZAKI CORPORATION

1. SCOPE OF APPLICATION

This Standard specifies the requirements for S type connector to be used for the low voltage circuit of vehicles.

2. TYPE, PART SYMBOL, PART NO. AND APPLICABLE WIRE SIZE

According to Table - 1 and Table - 2

1) Terminal

Table-1

CLASSIFICATION	SYMBOL	PART NO.	WIRESIZE	REMARKS
MALE	S M	7114-1230	AV(S) 0.3 - 0.5	STANDARD
		-1231	0.85- 2	
	- H	7114-1238	AV(S) 0.3 - 0.5	HEAVY
		-1239	0.85- 2	
FEMALE	S F	7116-1230	AV(S) 0.3 - 0.5	STANDARD
		-1231	0.85- 2	
	- H	7116-1238	AV(S) 0.3 - 0.5	HEAVY
		-1239	0.85- 2	
	- Z	7116-1234	AV(S) 0.3 - 0.85	STANDARD (0.6 t)
		-1235	1.24- 2	

2) HOUSING AND REAR HOLDER

TABLE -2

MALE HOUSING			FEMALE HOUSING		
SYMBOL	PART NO.	REAR HOLDER PART NO.	SYMBOL	PART NO.	REAR HOLDER PART NO.
S01HV	7112-1610	7157-6010-70	S01FV	7123-1610	SAME AS MALE
S01HL	-1619-90	-6010-90	S01FL	-1619-90	↑
S02HV	-1620		S02FV	-1620	↑
S02HL	-1629-90	-6022-90	S02FL	-1629-90	7157-6023-90
			↑	↑	-6025-90
S02HB	-1623-30	-6024-20	S02FB	-1623-30	SAME AS MALE
S02HBR	-1628-80	-6026-80	S02FBR	-1628-80	↑
S03HV	-1630	-6030-70	S03FV	-1630	↑
S03HL	-1639-90	-6232-90	S03FL	-1639-90	7157-6033-90
S03HB	-1633-30	-6034-20	S03FB	-1633-30	-6035-20
S04HV	-1640	-6040-70	S04FV	-1640	SAME AS MALE
S04HL	-1649-90	-6242-90	S04FL	-1649-90	↑
S04HB	-1643-30	-6044-20	S04FB	-1643-30	↑
S06HV	-1660	-6060-70	S06FV	-1660	↑
			S06FV -S	↑	7157-6065-70

MALE HOUSING			FEMALE HOUSING		
SYMBOL	PART NO.	REAR HOLDER PART NO.	SYMBOL	PART NO.	REAR HOLDER PART NO.
S06ML	7112-1669-90	7157-6062-90	S06FL	7123-1669-90	7157-6063-90
S06MB	-1663-30	-6064-20	S06FB	-1663-30	SAME AS MALE
S08MV	-1680	-6080-70	S08FV	-1680	↑
S08ML	-1689-90	-6082-90	S08FL	-1689-90	7157-6083-90
S08MB	-1683-30	-6084-20	S08FB	-1683-30	-6085-20
S10HV	-1700	-6100-70	S10FV	-1700	-6101-70
			S10FV	↑	-6107-70
			-S	↑	
S10HV	-1709-90	-6102-90	S10FL	-1709-90	-6103-90
S10ML	-1703-30	-6104-20	S10FB	-1703-30	-6105-20
			S10FB	↑	-6109-80
			-P	↑	
S12HV	-1720	-6120-70	S12FV	-1720	-6121-70
S12ML	-1729-90	-6122-90	S12FL	-1729-90	-6123-90
S12MB	-1723-30	-6124-20	S12FB	-1723-30	-6125-20
S14HV	-1740	-6140-70	S14FV	-1740	SAME AS MALE
S16HV	-1760	-6160-70	S16FV	-1760	7157-6161-70
S16ML	-1769-90	-6162-90	S16FL	-1769-90	-6163-90
S16MB	-1763-30	-6164-20	S16FB	-1763-30	-6165-20
			S11FV	-1710	-6111-70
			S11FB	-1713-30	-6113-20

3/16)

CONFIDENTIAL

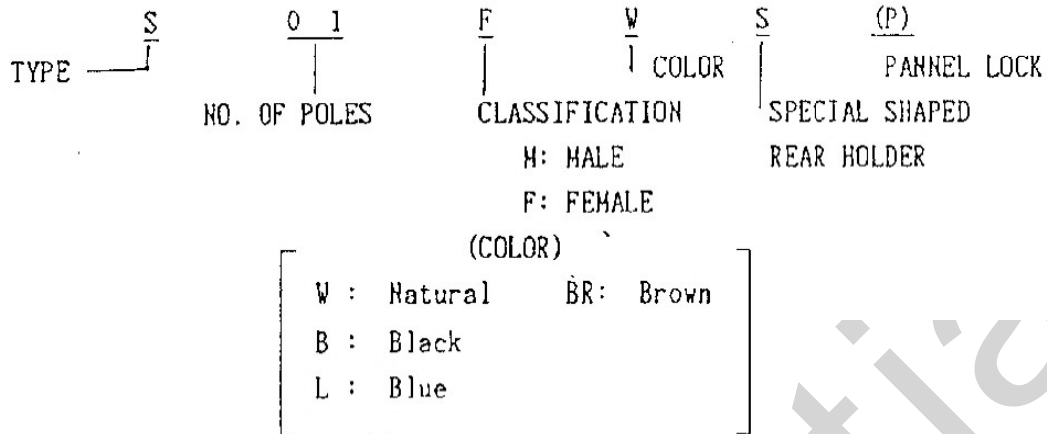
3. TERMINOLOGY

As for the terminology, refer to the explanation and "Instruction Manual for S Type connector" attached to this Standard.

4. SYMBOL

EX. - 2) TERMINAL S M (-H)
 TYPE CLASSIFICATION M: MALE HEAVY TYPE
 F: FEMALE

EX. - 2) HOUSING



5. STRUCTURE AND MATERIAL

The structure and material shall be as specified in the individual components drawings.

6. HANDLING PRECAUTIONS

Refer to "Instruction Manual for S Type Connector".

7. QUALITY AND PERFORMANCE

The quality and performance shall be as specified in Table-3 when tested in accordance with Item 8.

Table-3

Basic Performance

No.	Item	Performance	Method
7-1	Appearance	Free from detrimental cracks, loose parts, scratches, deformation, discoloration, etc.	8-1
7-2	Voltage Drop	Initial : 3mV/A or less After Test : 6mV/A or less	8-2
7-3	Terminal Removal Force	Initial : 0.25 - 0.6 kgf After 10 Times and Test : 0.15 - 0.5 kgf	8-3
7-4	Wire Pull-off force with terminal	Refer to Table-4	8-4

No.	Item	Performance	Method
7-5	Leakage Current	Initial : 10 μ A or less After test : 1 mA or less	8-5
7-6	Insulation Resistance	Initial : 100M Ω or over After Test : 1 M Ω or over	8-6
7-7	Dielectric Strength	To endure AC1000V for 1 minute	8-7
7-8	Temperature Rise	40°C or less. (Ambient temp. during use shall be 60°C or less.)	8-8
7-9	Connector Insertion Removal Force	Refer to Table-5	8-9
7-10	Lock Strength	10 kgf or over	8-10
7-11	Terminal Retention Force	Lance and rear holder 10kgf or over Lance 6kgf or over	8-11
7-12	Panel Lock Strength	8 kgf or over	8-12

Environmental Durability

No.	Item	Performance	Method
7-13	Vibration Resistance	An occurrence of electric dis-continuity with more than 1V of voltage drop shall not be observed for more than 10 microseconds. 7-1, 7-2 and 7-3 shall be satisfied	8-13, 8-1 8-2, 8-4
7-14	Impact Resistance	An occurrence of electric dis-continuity with more than 1V of voltage drop shall not be observed for more than 10 microseconds. 7-2 shall be satisfied.	8-14, 8-2

No.	Item	Performance	Method
7-15	Current Cycling	7-2, 7-4, 7-8 and 7-11 shall be satisfied.	8-15, 8-11 8-2, 8-4 8-8
7-16	Fuse Hatching	The housing shall not be melted and the connector shall not be flashed.	8-16 CONFIDENTIAL
7-17	Heat Resistance	7-2, 7-4 and 7-11 shall be satisfied.	8-17, 8-2 8-11, 8-4
7-18	Cold Resistance	7-2, 7-4 and 7-11 shall be satisfied. shall be satisfied.	8-18, 8-2 8-4, 8-11
7-19	Dust Resistance	7-2 shall be satisfied.	8-19, 8-2
7-20	Water Proof	7-2, 7-6 and 7-7 shall be satisfied.	8-20, 8-2
7-21	Oil Resistance	7-2 shall be satisfied.	8-21, 8-2
7-22	Sulfuric Acid Resistance	7-2 shall be satisfied.	8-22, 8-2

Table-4

Wire Size Crimped to Terminal				
0.3 sq	0.5 sq	0.85 sq	1.25 sq	2 sq
13kgf or over	17kgf or over	25kgf or over	35kgf or over	40kgf or over

Table-5

CONNECTOR	INSERTION FORCE	EXTRACTION FORCE
1 P	5.5 kgf or less	Same as insertion force
2 P	6 " (W = 7.5kgf or less)	"
3 P	6.5 " (W,B = 7.9kgf or less)	"
4 P	7 " (W = 8.4kgf or less)	"
6 P	8 " (W,B = 9.2kgf or less)	"
8 P	9 " (W = 10kgf or less)	"
10 P	10 "	"
11 P	" "	"
12 P	" "	"
14 P	" "	"
16 P	" "	"

8. TESTING AND MEASURING METHODS

8-1) Appearance

Inspect visually or by touching.

8-2) Voltage Drop

With the male and female connector or terminal properly coupled, the following voltage drop shall be measured by applying the following voltage and current through the circuit. The measurement shall be made between the points which are 200mm apart from the wire crimp when the voltage drop has been stabilized. From the measured reading, the wire resistance over 400mm (between Y - Y in Fig. 1) shall be deducted to obtain the contact resistance.

Table-6

Order	Application	Open Circuit Voltage	Short Circuit Current
1	Normal Current Circuit	+1 13 V -0	1 A
2	Max. Current Circuit	+1 13 V -0	Current shown in 8-8

WIRESIZE PER ELECTRIC RESISTANCE

		1.25mm ²	14.1mΩ/m	0.5mm ²	32.5mΩ/m
2 mm ²	8.67mΩ/m	0.85mm ²	20.5mΩ/m	0.3mm ²	49.2mΩ/m

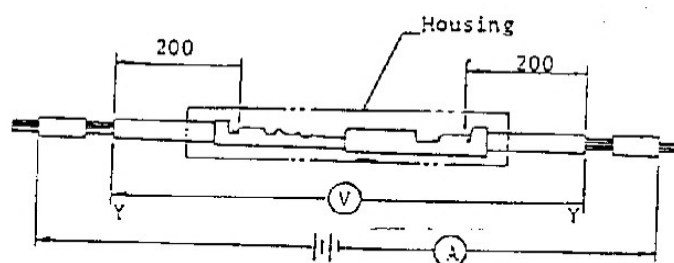


Fig. 1

8-3) Terminal Removal Force

With the male and female terminal properly coupled, the removal force shall be measured by extracting half of the mated parts at a rate of 200mm a minute. Then, the same measurement shall be made after 10 times of insertion and removal.

8-4) Wire Pull-Off

The crimp strength shall be measured by pulling the wire at the point which is 50 -100mm away from the crimp in an axial direction at a speed of 200mm a minute. The load shall be measured when the wire is broken or pulled off the terminal.

8-5) Leakage Current

With the connector properly coupled, it shall be tested for leakage current by measuring between adjacent terminals under a voltage of DC 13^{+1}_{-0} V, after exposure for 1 hour under temp-humidity test conditioning in the test chamber at $60^{\circ} \pm 5^{\circ}\text{C}$ with relative humidity of 90 - 95 % is maintained.

8-6) Insulation Resistance

With the connector properly coupled, the insulation resistance shall be measured by applying a test potential of DC 500V between the adjacent terminals, and terminal and housing (surface).

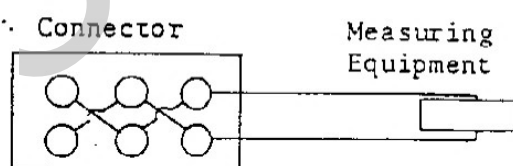
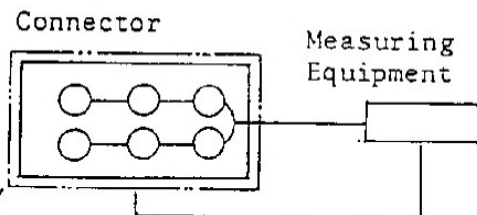


Fig - 2



The housing surface shall be covered with metallic foil.

Fig - 3

8-7) Dielectric Strength

With the connector properly coupled, the dielectric strength shall be measured by applying AC 1000V with commercial frequency between adjacent terminals and between the terminal and the housing (surface).

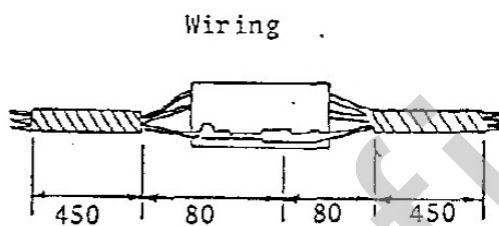
8-8) Temperature Rise

With half of the poles connected in series, the connector shall be energized with the following current and then the temperature at the surface near the terminal contact shall be measured when the temperature has stabilize. For current and wire size, see below. The ambient temperature shall be 60°C.

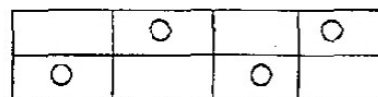
*The test shall be carried out in a draft-free chamber.

Table - 7

TYPE	S	S - H
CURRENT	1 0	1 5
WIRE SIZE (mm ²)	AVS 1.25	AVS 1.25



A half of the poles are energized.



○ = energized

Fig - 4

8-9) Connector Insertion / Removal Force

The insertion / removal force shall be measured by connecting and disconnecting a mating pair of connector assemblies at a rate of 20mm a minute. The insertion/removal force shall be measured with the locking device set in effect and removal force shall be measured without the locking device set in effect respectively.

The housing shall be inserted in the direction of mating axis without holding it.

8-10) Locking Device Strength

With the male and female connector housings properly coupled a half of mated parts shall be fastened with the locking device set in effect and an axial pull-off load shall be applied to the counterpart to travel with the constant speed at a rate of 200mm a minute. The load shall be measured when the locking device is unmated or broken.

CONFIDENTIAL

8-11) Terminal Retention Force

The housing with an on-wire contact inserted shall be fastened. The terminal retention force shall be measured by applying an axial pull-off load to the point which is 50 - 100mm apart from the crimp to travel with the speed at a constant rate of 200mm a minute. The load shall be measured when the terminal is pulled off the housing. The wire size shall be 0.85mm² or over.

8-12) Panel Locking Strength

The all contact-loaded, mated pair of connector shall be fastened to the case holder. The panel locking strength shall be measured by applying an axial and perpendicular pull-off load to the wire to travel with the speed at a rate of 200mm a minute. The load shall be measured when the connector is unmated or broken.

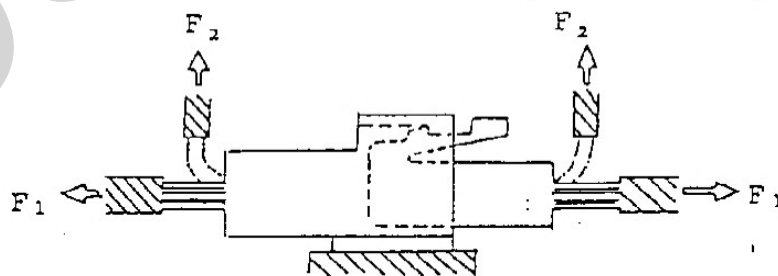


Fig - 5

8-13) Vibration Resistance

The connector with all poles connected in series shall be mounted on the vibration table and shall be vibrated ~~with~~ applying the open circuit voltage of $13 \begin{matrix} +1 \\ -0 \end{matrix}$ V and the current \pm below). During vibration, the circuit shall be monitored for an electric discontinuity of no more than 10 microseconds.

* For the first 4 hours, 10mA and for the latter, the current shown in 8-8.

- a) The wire shall be set as shown in Fig. 2 at such a height that the test specimen does not touch the vibration table due to vibration. The distance between the clamps shall be approx. 300mm to make the wire tight. It shall be vibrated for 8 hours with a vibration acceleration of 4.4G and a vibration frequency between 600 and 3000 cpm, a cycle lasting 8 minutes.

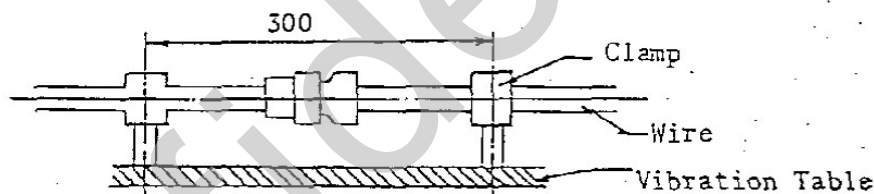
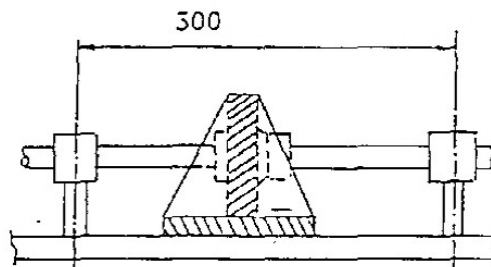


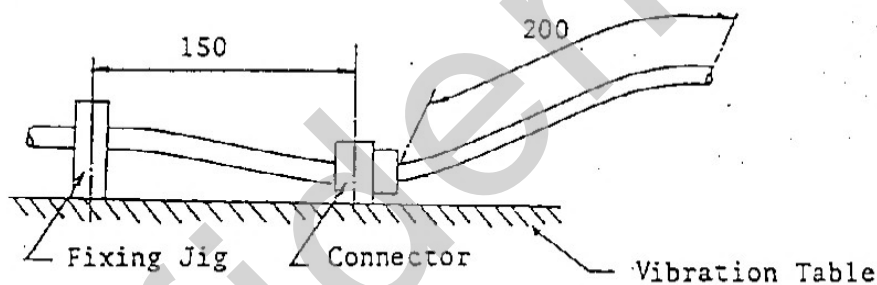
fig - 6

- b) The connector shall be set as shown below at such a height that the wire does not touch the vibration table due to vibration. It shall be vibrated with a vibration acceleration of 6.8G and a vibration frequency between 3000 and 12000 cpm, a cycle lasting 8 min: 4 hours up and down, 2 hours each in back and forth and in side to side, for a total of 8 hours. (The connector of the panel locking type shall be test with mounted on a panel.)



8-14) Impact Resistance

- a) The connector shall be mounted on the vibration plate in such a manner as shown in Fig. 3 such that the connector always touches the vibration table, but is not fastened. It shall be vibrated for 1 hour with a vibration acceleration of 6.8G and a vibration frequency between 600 and 3000cpm, a cycle lasting 8 minutes.



- b) In accordance with JIS D 5500, 6.6, the up and down impact shall be applied for 1 hour while applying the open circuit voltage of 13^{+1}_{-0} and the short circuit current of 10mA. The circuit shall be monitored for an electric discontinuity of more than 10 microseconds.

8-15) Current Cycling Resistance

The mated connectors with half of the poles connected in series shall be energized at the ambient temperature of 60°C with the current (±) below for 1000 cycles, each cycle consisting of 45 minutes on and 15 minutes off.

*Current = the value specified in 8-8) Temperature Rise. Wire size is the same as section 8-8) also.

8-16) Fuse Matching

A half of the poles shall be energized with the current of 22A for 24 hours and then with the current of 27A for 1 hour. The wire size shall be AVS 1.25. The ambient temperature shall be 60°C.

8-17) Heat Resistance

The mated pair of connector assemblies shall be exposed in the test chamber at 100°C for 24 hours. It shall then be taken out and allowed to cool down to room temperature.

8-18) Cold Resistance

The mated pair of connector assemblies shall be exposed in the test chamber at -40^{+0}_{-10} °C for 24 hours.

8-19) Dust Resistance

The mated pair of connector assemblies shall be exposed in the enclosed tank with dimensions of 1000mm, 150mm apart from the walls. 1.5kg of Portland cement (JIS R 5210) shall be blown by compressed air while dispersing by a fan for 10 seconds with 15 minutes suspension interval for 1 hour. It shall then be taken out and shall be inserted and extracted for three times.

8-20) Water Resistance

In accordance with JIS D 0203(R2)

8-21) Oil Resistance

- a) The mated pair of connector assemblies shall be immersed in an equal mixture of engine oil (SAE 10W or equivalent) and kerosene (JIS K 2203-2) at $50 \pm 2^\circ\text{C}$ for 2 hours. It shall then be taken out and allowed to cool at room temperature.
 - b) The mated pair of connector assemblies shall be immersed in gasoline for vehicles (JIS K 2202) at room temperature for 10 minutes. It shall then be taken out.
- The tests a) and b) shall be carried out separately.

8-22) Sulfurous Acid Gas Resistance

The mated pair of connector assemblies shall be exposed to sulfurous acid gas at room temperature, concentration of 500ppm and humidity of 90% for 8 hours. The measurement shall be made immediately after it is taken out of the chamber.

EXPLANATION OF THE S TYPE CONNECTOR

1. Defination of Terminology

1) S Type Connector

Small (S) current type connector having a size of 0.8 t x 2.8 w.

2) Terminal

A terminal is a point of connection in an electric circuit and is used independently or as a component part of a connector.

3) Housing

A housing accommodates a terminal and is used as a component part of a connector.

4) Rear Holder

After a terminal is inserted in a housing, a rear holder is inserted from the back of the housing to avoid insufficient insertion of the terminal. The terminal is retained to the housing by the plastic arm as well as the rear holder to improve terminal retention.

5) Connector

A connector is an assembly of a housing, a terminal and a rear holder.

2. Features

The new mechanisms and the features of the S Type Connector are as follows. For greater detail, refer to the 'Instruction Manual for the S Type Connector's.

1) Locking Device

This connector is furnished with the inertia locking system.

" Inertia Locking System"

Just before the female and male terminals touch, the repulsive force becomes zero. Therefore, the terminals are inserted by the inertial force of operator to couple the connectors completely. In order to call the operator's attention and to attain a complete electric connection, the device is designed to be unmated when the connectors are coupled insufficiently and to be locked only when they are coupled completely.

2) Rear Holder System of Terminal

As explained in 1-4), the rear holder is inserted from the back of the housing to avoid insufficient insertion of the terminals. The terminals are locked with the plastic arm as well as the rear holder, which improve the terminal retention force.