# RM SERIES SHELL SIZE 12 - 31mm CIRCULAR CONNECTORS

#### Introduction

RM Series are compact, circular connectors HIROSE has developed as the result of many years of research and proven experience to meet the most stringent demands of communication equipment as well as electronic equipment. RM Series is available in 5 shell sizes: 12, 15, 21, 24, and 31. There are also 16 kinds of contacts: 2, 3, 4, 5, 6, 7, 8, 10, 12, 15, 20, 31, 40, and 55 (contacts 2 and 4 are available in two types). And also available water proof type in special series. The lock mechanisms with thread coupling

type, bayonet sleeve type or quick detachable type are easy to use,

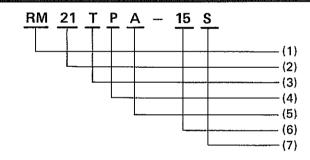
Various kinds of accessories are available.

RM Series are miniaturized in size, rugged and excellent in mechanical and electrical performance thus making it possible to meet the most stringent demands of users. Refer to the contact arrangements of RM series connectors on page 60~61.

### Main materials (Note that the above may not apply depending on type.)

Part	Material	Finish
Shell	Brass and Zinc alloy	Nickel plated
Insulator	Synthetic resin	
Male contact	Copper alloy	Silver plated
Female contact	Copper alloy	Silver plated

### **Ordering Information**



#### Product identification

(1) RM: Round Miniature series name

(2) 21: The shell size is figured by outer diameter of fitting section of plug and available in 5 types, 12, 15, 21, 24, 31.

(3) T: Type of lock mechanism as follows;

T: Thread coupling type

B: Bayonet sleeve type

Q: Quick detachable type

(4) P: Type of connector

P: Plug

R: Receptacle:

J: Jack

WP: Waterproof

WR: Waterproof receptacle P-CP\*: Cord clamp for plug

(\* is shown applicable diameter of cable)

R-C: Cap of receptacle

R-F: Square flange for receptacle

P-B: Cord bushing

(5) A: Shell model change mark

Each time the shell undergoes a change in enclosure or the like, it is marked as A, B, D, E. Do not use the letter for C, J, P, R avoiding confusion.

(6) 15: Number of pins

(7) S: Shape of contact

P: Pin

S: Socket

However, connecting method of contact or type shall be classified adding with alphabetical letter.

### Standard RM Series

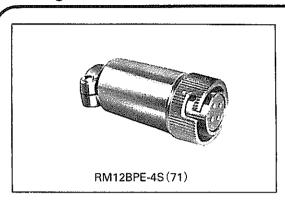
Standard RM series are more compact and higher in performance than our former models. Mechanically stable thanks to its rigid and simple construction. Used widely for all types of equipment, although no special measures are taken for resistance to harsh conditions such as dustproof or waterproof design.

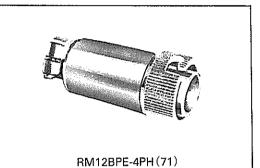
#### **RM12B Connectors**

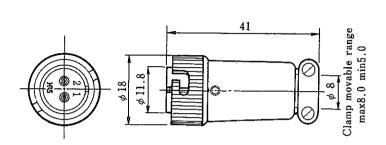
RM12B connectors (bayonet sleeve type) are provided with a bayonet sleeve locking mechanism, the most compact in the series.

(Bayonet sleeve type)

### Plug







(An example in shape)

HRS No.	Part No.	No. of pins	RoHS
109-0423-0-71	RM12BPE-2S(71)	2	
109-0424-2-71	RM12BPE-3S (71)	3	
109-0425-5-71	RM12BPE-4S (71)	4	
109-0426-8-71	RM12BPE-5S (71)	5	0
109-0427-0-71	RM12BPE-6S (71)	6	
109-0428-3-71	RM12BPE-7S (71)	7	

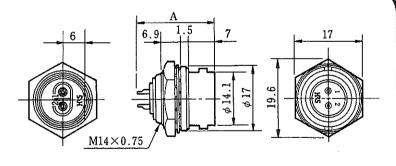
	HRS No.	Part No.	No. of pins	RoHS
ĺ	109-0417-7-71	RM128PE-2PH(71)	2	
l	109-0418-0-71	RM12BPE-3PH(71)	3	
	109-0419-2-71	RM12BPE-4PH(71)	4	0
	109-0420-1-71	RM12BPE-5PH(71)	5	U
	109-0421-4-71	RM12BPE-6PH(71)	6	
	109-0422-7-71	RM12BPE-7PH(71)	7	

### Receptacle





RM12BRD-4PH (71)





RM12BRD-4S(71)

(An example in shape)

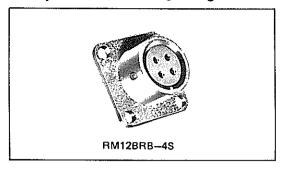
HRS No.	Part No.	No. of pins	A	RoHS
109-0823-8-71	RM12BRD-2PH (71)	2	20.5	
109-0824-0-71	RM12BRD-3PH (71)	3	20.5	
109-0825-3-71	RM12BRD-4PH (71)	4	20.5	
109-0826-6-71	RM12BRD-5PH (71)	5	20.5	
109-0827-9-71	RM12BRD-6PH(71)	6	20.5	
109-0828-1-71	RM12BRD-7PH (71)	7	20.5	

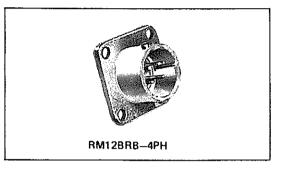
Remark:	For mounting	holes, see	page	60.

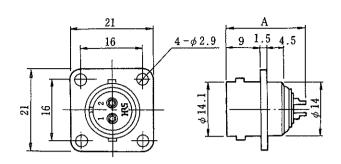
HRS No.	Part No.	No. of pins	А	RoHS
109-0609-8-71	RM12BRD-2S (71)	2	21.6	
109-0610-7-71	RM12BRD-3S (71)	3	21.6	
109-0611-0-71	RM12BRD-4S (71)	4	21.6	_
109-0612-2-71	RM12BRD-5S (71)	5	21.6	
109-0613-5-71	RM12BRD-6S (71)	6	21.6	
109-0619-1-71	RM12BRD-7S (71)	7	21.6	

## Receptacle

### Receptacle (square flange) single methed





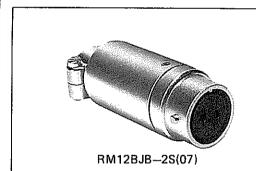


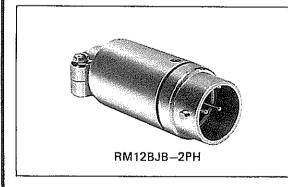
#### (An example in shape)

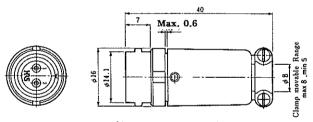
HRS No.	Part No.	No of pins	А	RaHS	HRS No.	Part No.	No of pins	Α	RoHS
109-0577-3	RM12BRB-2S	2	21.6		109-0817-5	RM12BRB-2PH	2	20.5	
109-0578-6	RM12BRB-3S	3	21.6		109-0818-8	RM12BRB-3PH	3	20.5	
109-0579-9	RM12BRB-4S	4	21.6		109-0819-0	RM12BRB-4PH	4	20.5	
109-0580-8	RM12BRB-5S	5	21.6	$ \circ $	109-0820-0	RM12BRB-5PH	5	20.5	0
109-0581-0	RM12BRB-6S	6	21.6		109-0821-2	RM12BRB-6PH	6	20.5	]
109-0615-0	RM128RB-7S	7	21.6		109-0822-5	RM12BRB-7PH	7	20.5	1

Reinarks: 1. For mounting holes, see page 60.
2. Note that the RM12BRB differs in mounting dimensions from the RM12BR-F.

## Jack







(An example in shape)

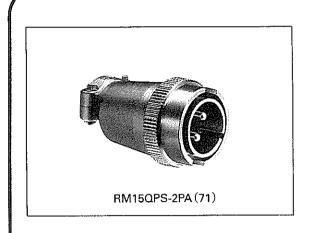
HRS No.	Part No.	No of pins	RoHS	HRS No.	Part No.	No of pins	RoHS
109-0638-6-07	RM12BJB-2S (07)	2		109-0829-4	RM12BJB-2PH	2	
109-0639-9-07	RM12BJB-3S (07)	3		109-0830-3	RM12BJB-3PH	3	
109-0640-8-07	RM12BJB-4S (07)	4		109-0831-6	RM12BJB-4PH	4	1 .
109-0641-0-07	RM12BJB-5S (07)	5	$ \circ $	109-0832-9	RM12BJB-5PH	5	0
109-0642-3-07	RM12BJB-6S (07)	6		109-0833-1	RM12BJB-6PH	6	
109-0643-6-07	RM12BJB-7S (07)	7		109-0834-4	RM12BJB-7PH	7	

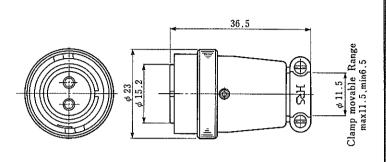
#### Model RM15Q Connectors

(Quick insertion/extraction system)

The model RM15Q connectors have a quick insertion/ extraction locking mechanism. Developed by HIROSE, this mechanism allows quicker operation than the locking mechanism of a thread coupling or bayonet coupling.

### Plug



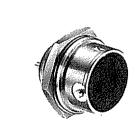


(An example in shape)

HRS No.	Part No.	No of pins	RoHS
109-0839-8-71	RM15QPS-2SA(71)	2	
109-0840-7-71	RM15QPS-4SA (71)	4	
109-0852-6-71	RM15QPS-8S (71)	8	0
109-0853-9-71	RM15QPS-10S(71)	10	
109-0981-9-71	RM15QPS-12S(71)	12	

HRS No.	Part No.	No of pins	RoHS
109-0896-1-71	RM15QPS-2PA(71)	2	!
109-0897-4-71	RM15QPS-4PA(71)	4	
109-0850-0-71	RM15QPS-8PH(71)	8	0
109-0851-3-71	RM15QPS-10PH(71)	10	
109-0980-6-71	RM15QPS-12PH (71)	12	

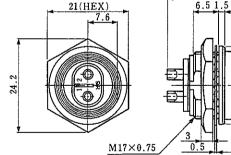
## Receptacle (Jam Nut to be fastened)

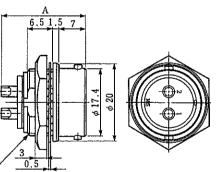


HRS No.

RM15QRD-2SA(71)

Part No.





Α	RoHS	HRS No.	Pai
21		109-0841-0-71	RM15QR

		pms			l
109-0880-1-71	RM15QRD-2PA (71)	2	21		
109-0881-4-71	RM15QRD-4PA (71)	4	21		
109-0854-1-71	RM15QRD-8PH (71)	8	20.6	0	
109-0855-4-71	RM15QRD-10PH(71)	10	20.6		
109-0982-1-71	RM15QRD-12PH(71)	12	20.6		ľ

No of

HRS No.	Part No.	No of pins	Α	RoHS
109-0841-0-71	RM15QRD-2SA(71)	2	21.7	
109-0842-2-71	RM15QRD-4SA (71)	4	21.7	
109-0864-5-71	RM15QRD-8\$ (71)	8	21.6	0
109-0779-8-71	RM15QRD-10S(71)	10	21.6	
109-0983-4-71	RM15QRD-12S(71)	12	21.6	

(An example in shape)

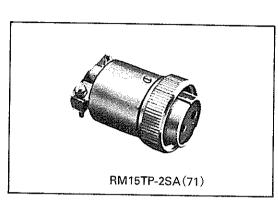
Remark: For mounting holes, see page 60.

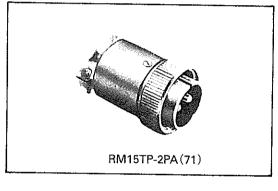
### RM( )T Connectors

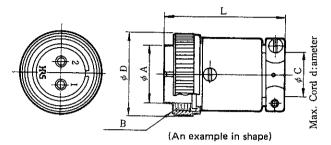
(Thread coupling)

### Plug

The RM[]T connectors have a screw coupling locking mechanism. Four models of the connectors with shell sizes of 15, 21, 24, and 31 have this locking mechanism. A connector of shell size 15 uses threads of 1 mm pitch. Connectors of shell size 21 and larger use trapezoidal threads for quick operation.



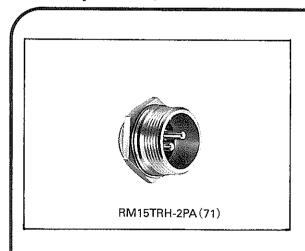


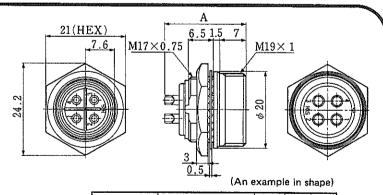


		No of			· · ·	1	1	1
HRS No.	Part No.	pins	φΑ	В	φС	φD	L	RoHS
109-0845-0-71	RM15TP-2SA(71)	2	15.2	M19×1	11.5	21.5	34	
109-0898-7-71	RM15TP-2PA (71)	2	15.2	M19×1	11.5	21.5	34	
109-0846-3-71	RM15TP-4SA (71)	4	15.2	M19×1	11.5	21.5	34	] ]
109-0899-0-71	RM15TP-4PA (71)	4	15.2	M19×1	11.5	21.5	34	]
109-0053-2-71	RM15TP-8S (71)	8	15.2	M19×1	11,5	21.5	34	1
109-0856-7-71	RM15TP-8PH(71)	8	15.2	M19×1	11.5	21.5	34	1
109-0055-8-71	RM15TP-10\$ (71)	10	15.2	M19×1	11.5	21.5	34	1 1
109-0857-0-71	RM15TP-10PH(71)	10	15.2	M19×1	11.5	21.5	34	Ĭ
109-0321-0-71	RM21TP-15\$ (71)	15	21	TM25×2	15	28	37	1 <sub>~</sub> [
109-0323-5-71	RM21TP-15P(71)	15	21	TM25×2	15	28	37	101
109-0322-2-71	RM21TP-20S (71)	20	21	TM25×2	15	28	37	1
109-0324-8-71	RM21TP-20P(71)	20	21	TM25×2	15	28	37	1 1
109-0481-6-71	RM24TP-31\$ (71)	31	24.3	TM29×2	19	32	41	
109-0482-9-71	RM24TP-31P(71)	31	24.3	TM29×2	19	32	41	
109-0361-4-71	RM31TP-40S (71)	40	30.8	TM35×2	26	40	47	
109-0363-0-71	RM31TP-40P(71)	40	30.8	TM35×2	26	40	47	
109-0362-7-71	RM31TP-55S (71)	55	30.8	TM35×2	26	40	47	1
109-0364-2-71	RM31TP-55P (71)	55	30.8	TM35×2	26	40	47	

Remark: TM25X2 is shown trapezoidal thread of 30°.

## Receptacle (Jam Nut to be fastened)

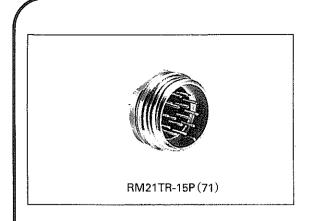


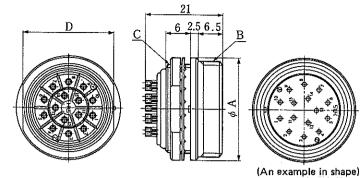


HRS No.	Part No.	No of pins	Α	RoHS
109-0886-8-71	RM15TRH-2PA (71)	2	21	
109-0847-6-71	RM15TRH-2SA(71)	2	21.7	1
109-0887-0-71	RM15TRH-4PA(71)	4	21	
109-0848-9-71	RM15TRH-4SA(71)	4	21.7	0
109-0858-2-71	RM15TRH-8PH (71)	8	20.6	
109-0868-6-71	RM15TRH-8S (71)	8	21.6	]
109-0859-5-71	RM15TRH-10PH (71)	10	20.6	
109-0869-9-71	RM15TRH-10S(71)	10	21.6	

Remark: For mounting holes, see page 60.

## Receptacle



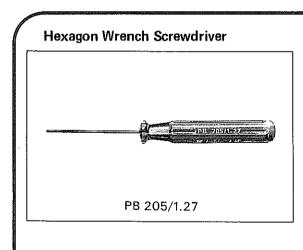


HRS No.	Part No.	No of pins	φΑ	В	С	D	RoHS
109-0325-0-71	RM21TR-15P(71)	15	27	TM25×2	M22×0.75	23.5	
109-0327-6-71	RM21TR-15S(71)	15	27	TM25×2	M22×0.75	23.5	
109-0326-3-71	RM21TR-20P(71)	20	27	TM25×2	M22×0.75	23.5	
109-0328-9-71	RM21TR-20S(71)	20	27	TM25×2	M22×0.75	23.5	1
109-0483-1-71	RM24TR-31P(71)	31	31	TM29×2	M26×0.75	28	
109-0484-4-71	RM24TR-31S(71)	31	31	TM29×2	M26×0.75	28	0
109-0365-5-71	RM31TR-40P(71)	40	37	TM35×2	M32×0.75	34	1
109-0367-0-71	RM31TR-40\$(71)	40	37	TM35×2	M32×0.75	34	
109-0366-8-71	RM31TR-55P(71)	55	37	TM35×2	M32×0.75	34	
109-0368-3-71	RM31TR-55S (71)	55	37	TM35×2	M32×0.75	34	1

Remarks: 1. TM25X2 is shown trapezoidal thread of 30°.

2. For mounting holes, see page 60.

## Tool



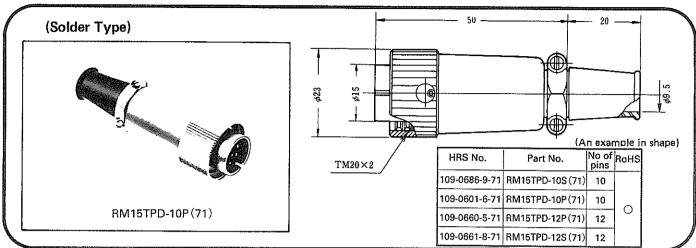
HRS No.	Part No.	Remark
150-0066-3	PB205/1.27	

## RM15T(D Type) connectors

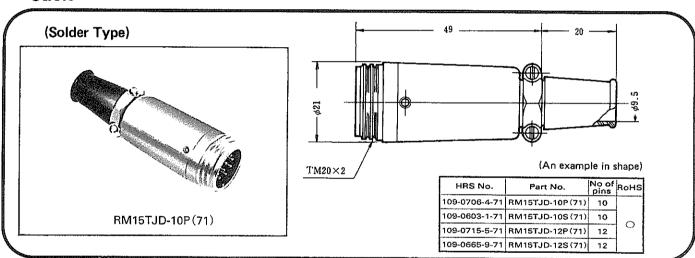
The RM15T (model D) connectors are designed for high grade of commercial applications such as VTR. These connectors boast a highly refined design.

Since the model D uses locking threads of 30° trapezoidal threads, it is incompatible with the RM15T connectors.

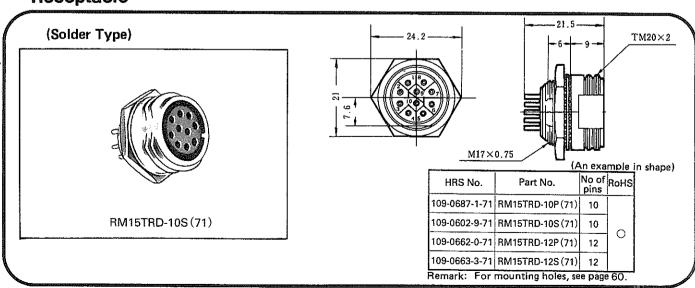
## Plug



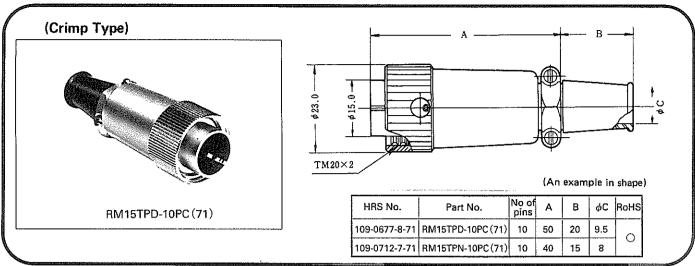
#### Jack



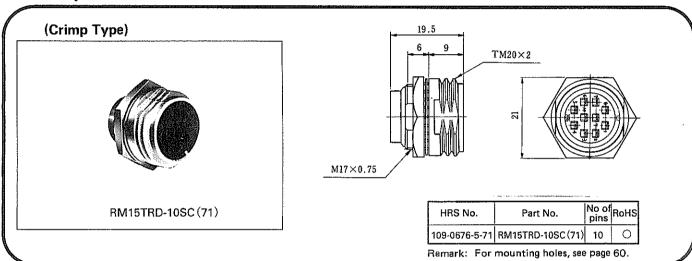
## Receptacle



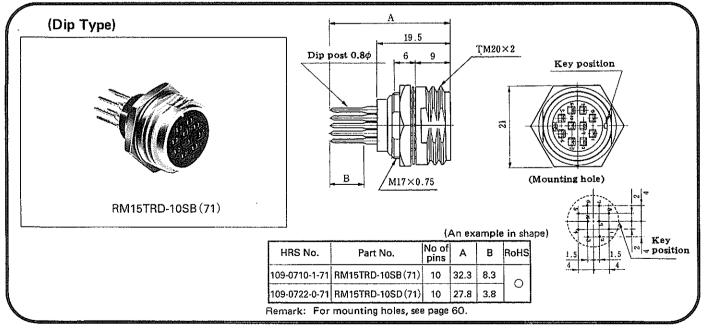
## Plug



## Receptacle



## Receptacle



#### **Contact**

#### Pin contact



Туре HRS No. Part No. В С Applicable wire RoHS 109-0668-7 RM-PC-112 1.6 2.0 AWG#20~#24 Loose contact 109-0672-4 RM-PC-122 1.45 1.5 AWG#24~#28 0 109-0670-9 Chain RM-PC-212 AWG#20~#24 1.6 2.0 contact 109-0674-0 RM-PC-222 1.45 1.5 AWG#24~#28

Fig—1

#### Socket contact

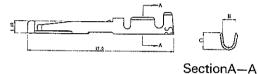


Fig-2

Туре HRS No. Part No. В С Applicable wire RoHS 109-0669-0 RM-SC-112 1.6 2.0 AWG#20~#24 Loose contact 109-0673-7 RM-SC-122 1.45 1.5 AWG#24~#28 O 109-0671-1 RM-SC-212 Chain 1.6 2.0 AWG#20~#24 contact 109-0675-2 RM-SC-222 1.45 1.5 AWG#24~#28

Note: Loose-piece pins are available in pack.

Each pack contains 100 pieces.

Reel pins are available, one reel contains 8,000 pieces.

SectionA-A

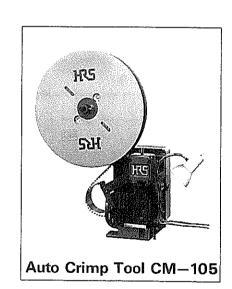
## **●**Tools

Туре	Item	HRS No.	Part No.	Applicable terminal	Applicable wire
		150-0006-1	DN-TO-11	RM-PC-112	
Manual Manual crimping		RM-TC~11	RM-SC-112	AWG#20~#24	
Wandai	tool 150-0007-4 RM-TC-1:	160-0007-4	DM-TO-40	RM-PC-122	
		HW-10-12	RM-SC-122	AWG#24~#28	
	Automatic crimping machine body	901-0005-4	CM-105	_	Abbytrage
Automatic		901-2017-4		RM-PC-212	
Automatic	Applicator	901-2017-4	AP105-RM-1	RM-SC-212	AWG#20~#24
Аррпсаког	901-2018-7	AP105-RM-2	RM-PC-222	***************************************	
	901 2016-7	AFTUS-KM°2	RM-SC-222	AWG#24~#28	
Ε	xtraction	150-0008-7	RM-TP	_	_



**Hand Crimp Tool** 

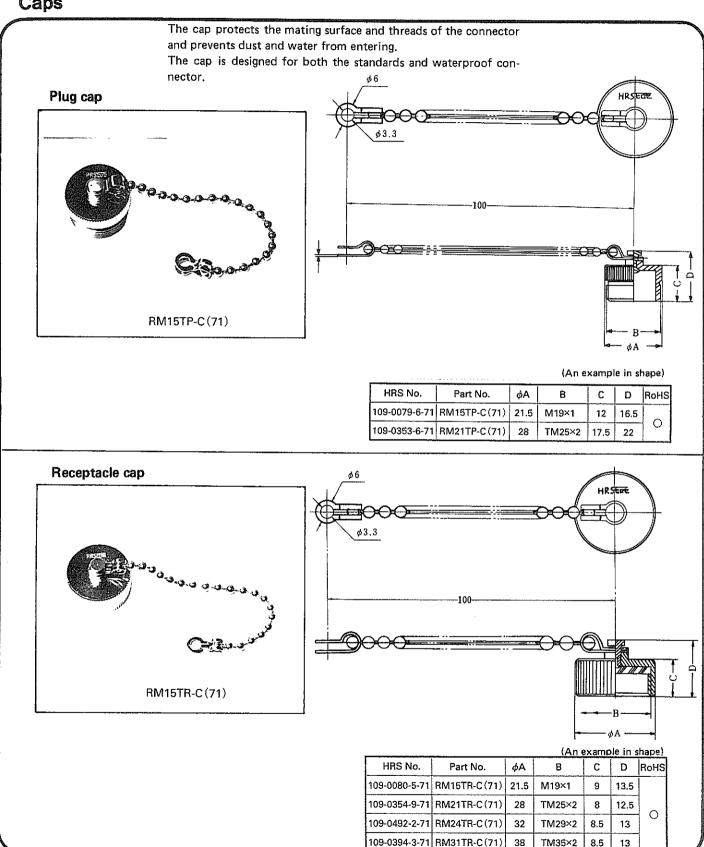
**Extraction Tool** 



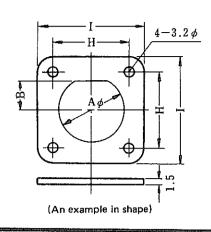
## **RM Series accessories**

The RM series have accessories such as a cap, cord busing, and square flange designed for different applications.





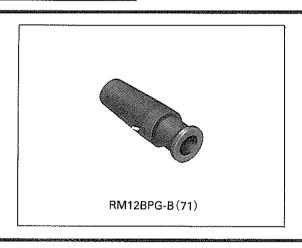
## **Square Flange**

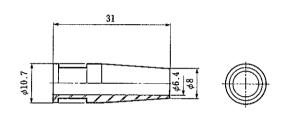


Square Flange is used with Bayonet Lock type receptacle.

HRS No.	Part No.	φΑ	В	Н	ı	RoHS
109-0154-0-71	RM12BR-F(71)	14.1	6	18	26	
109-0319-8-71	RM15TR-F(71)	17.1	7.6	20.6	28	

## **Cord Bushing**



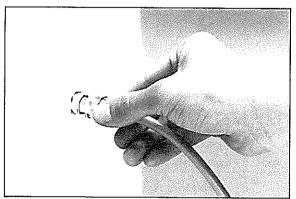


HRS No.	HRS No. Part No.		RoHS
109-0776-0-71	RM12BPG-B (71)		0

### How to use the RM15Q Connectors

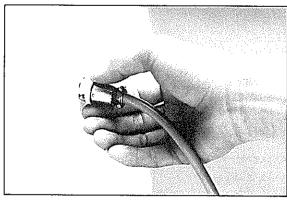
#### (Quick insertion and extraction system)

#### 1. Insertion



Holding the plug body, match the key with the keyway on the receptacle and push straight in. Turn plug  $30^{\circ}$  to the right, coupling is completed.

#### 2, Extraction



Holding plug sleeve, twist it 30 degrees to the left. Then, pull it straight for easy releasing.

### Dimensions of mounting holes

For your reference, the dimensions of receptacle mounting holes are given below for different shell sizes for the nuttightening type and square-flange type.

In the case of the nut-tightening type, the dimensions of a

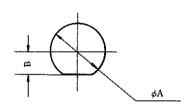
standard connector are the same as those of a waterproof connector. The dimensions of square flanges are those when the flanges are installed on the front surface of a panel. For details, contact our sales or engineering department.

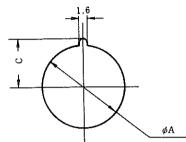
#### Nut tightening type

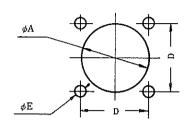
#### Square flange type

Mounting holes, for shell sizes 21, 24, 31

Mounting holes, for shell sizes 12, 15







Remark: Use a  $0.5 \sim 2$  mm thickness panel for all shell sizes.

Mounting method	112113						
Locking Shell size	12		15	21	24	31	12
Locking mechanism Sign	BRD•WBR	QRD	TRH•TRD• WTR		TR•WTR		BRB
φΑ	14.1	17.1	17,1	22.1	26.1	32.1	14.5
В	6.1	7.6	7.6	_	_	-	_
С	_			13.3	14.6	18.3	
D	_	_	-	_	_		16
φΕ	_	_		_		_	2.9

### RM Series contact arrangement

Shell size						
12	2 l	3 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		\$ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	9 9 91	60 01 9 0 01 1 07 01
Contact arrangement number	2	3	4	5	6	7
Withstanding voltage	AC1800V for a minute	AC1500V for a minute	AC1500V for a minute	AC1000V for a minute	AC1000V for a minute	AC1000V for a minute
Current rating	5A	5A	5A	5A	5A	5A
Insulation resistance	1000MΩ or more	1000MΩ or more	1000MΩ or more	1000MΩ or more	1000MΩ or more	1000MΩ or more
Contact resistance	4mΩ or less	$4m\Omega$ or less	4mΩ or less	4mΩ or less	4mΩ or less	4mΩ or less
Inside diameter of solder pot	ø1.1	ø1.1	ø1.1	ø1.1	φ <b>1</b> .1	ø1.1

## Contact arrangement

Shell size			_		
15	2 1 0 0	000	( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )	( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )	8 9 1 0 2 10 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0
Contact arrangement number	2	4	8	10	12
Withstanding voltage	AC1800V for a minute	AC1500V for a minute	AC1500V for a minute	AC1000V for a minute	AC1000V for a minute
Current rating	10A	10A	5A	5A	5A
Insulation resistance	1000MΩ or more	1000MΩ or more	1000MΩ or more	1000MΩ or more	1000MΩ or more
Contact resistance	2mΩ or less	2mΩ or less	4mΩ or less	4mΩ or less	4mΩ or less
Inside diameter of solder pot	ø1.7	ø1.7	ø1.1	φ1.1	ø1.1

Shell size			Shell size	
21	10 00 00 00 00 00 00 00 00 00 00 00 00 0		24	(100) (100) (100) (100) (100) (100) (100) (100) (100) (100) (100) (100) (100)
Contact arrangement number	15	20	Contact arrangement number	31
Withstanding voltage	AC1500V for a minute	AC1000V for a minute	Withstanding voltage	AC1500V for a minute
Current rating	5A	5A	Current rating	5A
Insulation resistance	1000MΩ or more	1000MΩ or more	Insulation resistance	1000MΩ or more
Contact resistance	4mΩ or less	4mΩ or less	Contact resistance	4mΩ or less
Inside diameter of solder pot	φ1.1	ø1.1	Inside diameter of solder pot	φ1. <b>1</b>

Shell size		
31	6 2 6 9 9 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Contact arrangement number	40	55
Withstanding voltage	AC1800V for a minute	AC1500V for a minute
Current rating	5A	5A
Insulation resistance	1000MΩ or more	1000M $\Omega$ or more
Contact resistance	4mΩ or less	4mΩ or less
Inside diameter of solder pot	ø1.1	φ1.1

#### Remarks:

- Figures show contact arrangements viewed from the fitting side of socket inserts (connecting side of pin inserts).
- Withstanding voltage is shown in test voltage. In ordinary case, use connectors at about 1/3 of test voltage.
- Insulator resistance is a value measured at DC 500V.
- 4. Contact resistance is a value measured at DC 1A.

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