RM SERIES SHELL SIZE 12 – 31mm CIRCULAR CONNECTORS

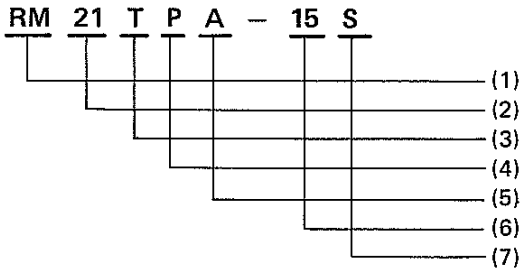
Introduction

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

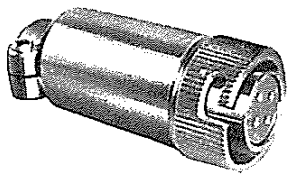
Standard RM series are more compact and higher in performance than our former models. Mechanically stable thanks to its rigid and simple construction. Used widely for all types of equipment, although no special measures are taken for resistance to harsh conditions such as dustproof or waterproof design.

RM12B Connectors

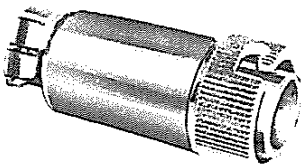
(Bayonet sleeve type)

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

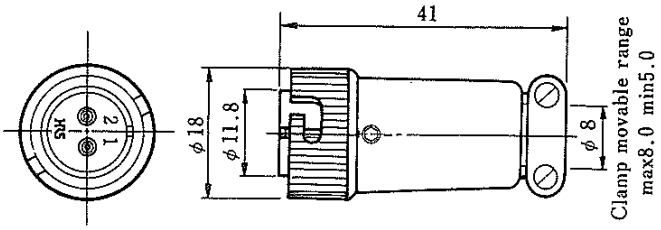
Plug



RM12BPE-4S(71)



RM12BPE-4PH(71)



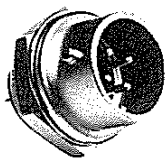
(An example in shape)

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	
109-0427-0-71	RM12BPE-6S(71)	6	
109-0428-3-71	RM12BPE-7S(71)	7	

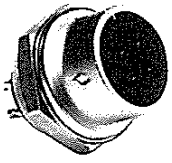
HRS No.	Part No.	No. of pins	RoHS
109-0417-7-71	RM12BPE-2PH(71)	2	○
109-0418-0-71	RM12BPE-3PH(71)	3	
109-0419-2-71	RM12BPE-4PH(71)	4	
109-0420-1-71	RM12BPE-5PH(71)	5	
109-0421-4-71	RM12BPE-6PH(71)	6	
109-0422-7-71	RM12BPE-7PH(71)	7	

Receptacle

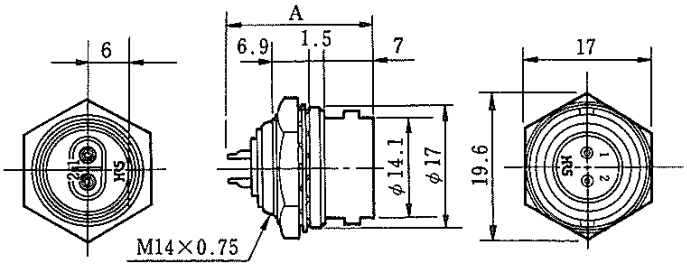
Receptacle(Jam Nut to be fastened)



RM12BRD-4PH(71)



RM12BRD-4S(71)



(An example in shape)

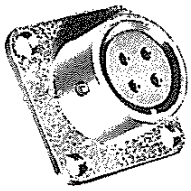
HRS No.	Part No.	No. of pins	A	RoHS
109-0823-8-71	RM12BRD-2PH(71)	2	20.5	○
109-0824-0-71	RM12BRD-3PH(71)	3	20.5	
109-0825-3-71	RM12BRD-4PH(71)	4	20.5	
109-0826-6-71	RM12BRD-5PH(71)	5	20.5	
109-0827-9-71	RM12BRD-6PH(71)	6	20.5	
109-0828-1-71	RM12BRD-7PH(71)	7	20.5	

HRS No.	Part No.	No. of pins	A	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	

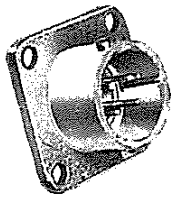
Remark: For mounting holes, see page 60.

Receptacle

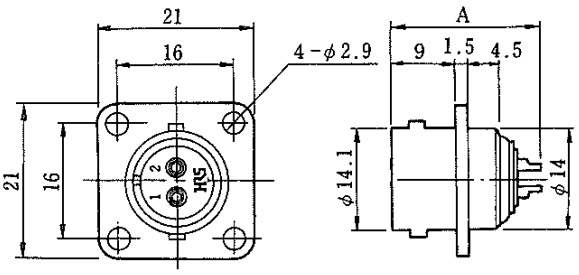
Receptacle (square flange) single methed



RM12BRB–4S



RM12BRB–4PH



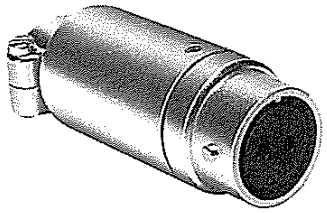
(An example in shape)

HRS No.	Part No.	No of pins	A	RoHS
109-0577-3	RM12BRB-2S	2	21.6	○
109-0578-6	RM12BRB-3S	3	21.6	
109-0579-9	RM12BRB-4S	4	21.6	
109-0580-8	RM12BRB-5S	5	21.6	
109-0581-0	RM12BRB-6S	6	21.6	
109-0615-0	RM12BRB-7S	7	21.6	

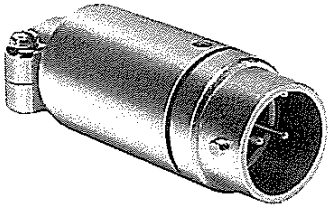
HRS No.	Part No.	No of pins	A	RoHS
109-0817-5	RM12BRB-2PH	2	20.5	○
109-0818-8	RM12BRB-3PH	3	20.5	
109-0819-0	RM12BRB-4PH	4	20.5	
109-0820-0	RM12BRB-5PH	5	20.5	
109-0821-2	RM12BRB-6PH	6	20.5	
109-0822-5	RM12BRB-7PH	7	20.5	

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

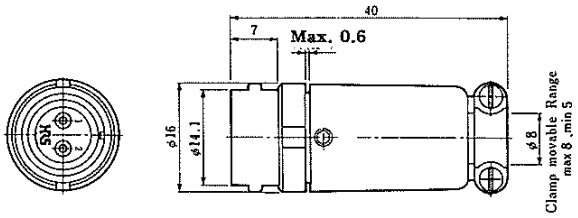
Jack



RM12BJB–2S(07)



RM12BJB–2PH



(An example in shape)

HRS No.	Part No.	No of pins	RoHS
109-0638-6-07	RM12BJB-2S (07)	2	○
109-0639-9-07	RM12BJB-3S (07)	3	
109-0640-8-07	RM12BJB-4S (07)	4	
109-0641-0-07	RM12BJB-5S (07)	5	
109-0642-3-07	RM12BJB-6S (07)	6	
109-0643-6-07	RM12BJB-7S (07)	7	

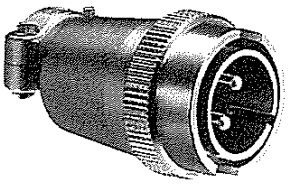
HRS No.	Part No.	No of pins	RoHS
109-0829-4	RM12BJB-2PH	2	○
109-0830-3	RM12BJB-3PH	3	
109-0831-6	RM12BJB-4PH	4	
109-0832-9	RM12BJB-5PH	5	
109-0833-1	RM12BJB-6PH	6	
109-0834-4	RM12BJB-7PH	7	

Model RM15Q Connectors

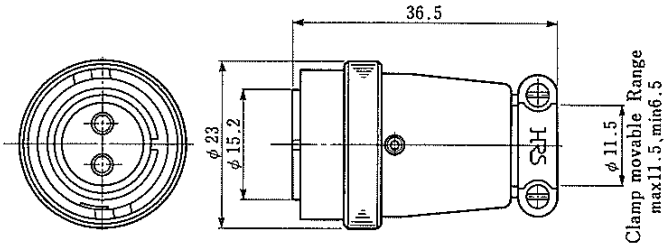
(Quick insertion/extraction system)

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



RM15QPS-2PA(71)

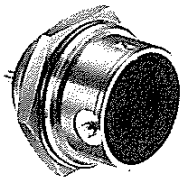


(An example in shape)

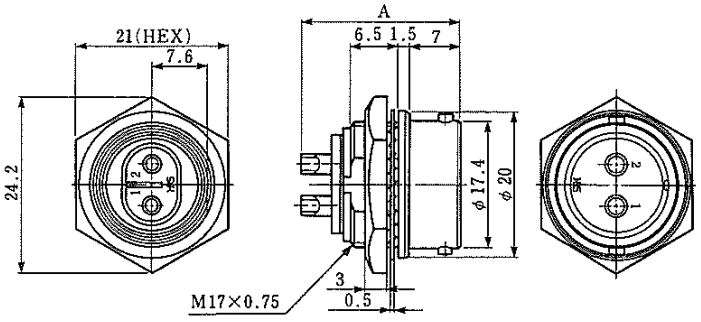
HRS No.	Part No.	No of pins	RoHS
109-0839-8-71	RM15QPS-2SA(71)	2	○
109-0840-7-71	RM15QPS-4SA(71)	4	
109-0852-6-71	RM15QPS-8S(71)	8	
109-0853-9-71	RM15QPS-10S(71)	10	
109-0981-9-71	RM15QPS-12S(71)	12	

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	
109-0851-3-71	RM15QPS-10PH(71)	10	
109-0980-6-71	RM15QPS-12PH(71)	12	

Receptacle (Jam Nut to be fastened)



RM15QRD-2SA(71)



(An example in shape)

HRS No.	Part No.	No of pins	A	RoHS
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	
109-0855-4-71	RM15QRD-10PH(71)	10	20.6	
109-0982-1-71	RM15QRD-12PH(71)	12	20.6	

HRS No.	Part No.	No of pins	A	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-8S(71)	8	21.6	
109-0779-8-71	RM15QRD-10S(71)	10	21.6	
109-0983-4-71	RM15QRD-12S(71)	12	21.6	

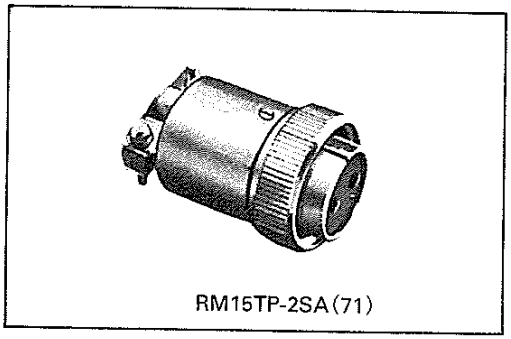
Remark: For mounting holes, see page 60.

RM( )T Connectors

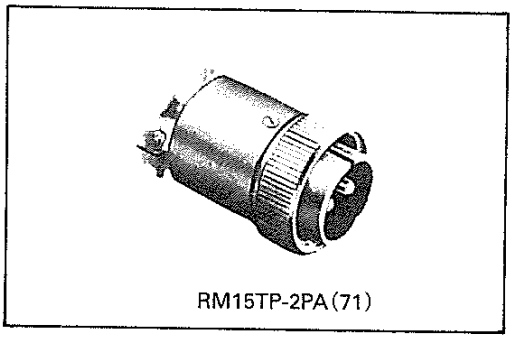
(Thread coupling)

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.

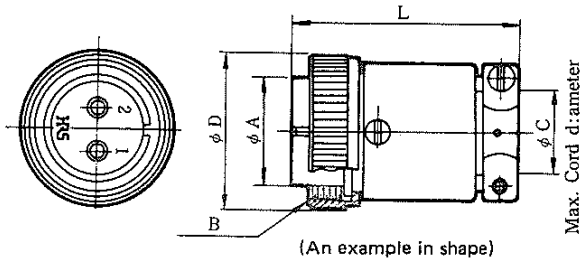
Plug



RM15TP-2SA(71)



RM15TP-2PA(71)

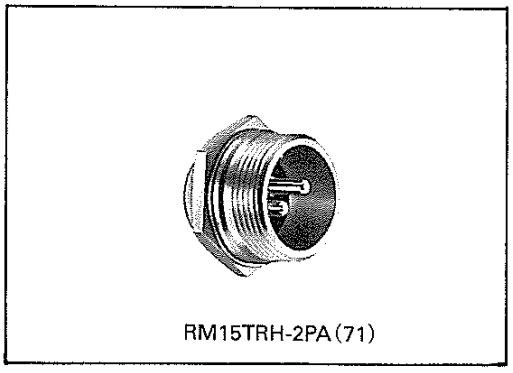


(An example in shape)

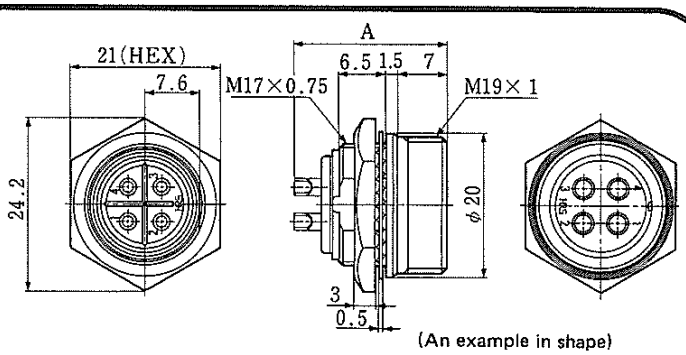
HRS No.	Part No.	No of pins	φA	B	φC	φD	L	RoHS
109-0845-0-71	RM15TP-2SA(71)	2	15.2	M19×1	11.5	21.5	34	○
109-0898-7-71	RM15TP-2PA(71)	2	15.2	M19×1	11.5	21.5	34	
109-0846-3-71	RM15TP-4SA(71)	4	15.2	M19×1	11.5	21.5	34	
109-0899-0-71	RM15TP-4PA(71)	4	15.2	M19×1	11.5	21.5	34	
109-0053-2-71	RM15TP-8S(71)	8	15.2	M19×1	11.5	21.5	34	
109-0856-7-71	RM15TP-8PH(71)	8	15.2	M19×1	11.5	21.5	34	
109-0055-8-71	RM15TP-10S(71)	10	15.2	M19×1	11.5	21.5	34	
109-0857-0-71	RM15TP-10PH(71)	10	15.2	M19×1	11.5	21.5	34	
109-0321-0-71	RM21TP-15S(71)	15	21	TM25×2	15	28	37	
109-0323-5-71	RM21TP-15P(71)	15	21	TM25×2	15	28	37	
109-0322-2-71	RM21TP-20S(71)	20	21	TM25×2	15	28	37	
109-0324-8-71	RM21TP-20P(71)	20	21	TM25×2	15	28	37	
109-0481-6-71	RM24TP-31S(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	
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)



RM15TRH-2PA(71)

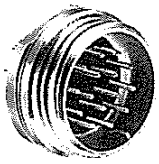


(An example in shape)

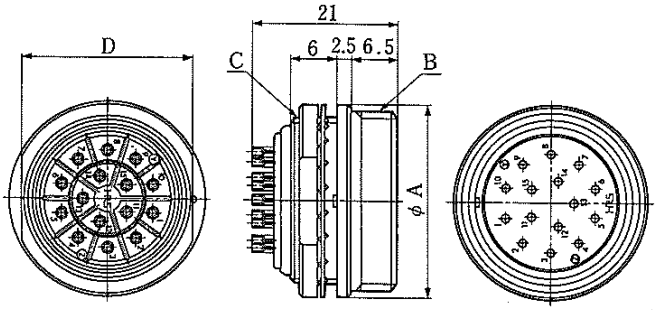
HRS No.	Part No.	No of pins	A	RoHS
109-0886-8-71	RM15TRH-2PA(71)	2	21	○
109-0847-6-71	RM15TRH-2SA(71)	2	21.7	
109-0887-0-71	RM15TRH-4PA(71)	4	21	
109-0848-9-71	RM15TRH-4SA(71)	4	21.7	
109-0858-2-71	RM15TRH-8PH(71)	8	20.6	
109-0868-6-71	RM15TRH-8S(71)	8	21.6	
109-0859-5-71	RM15TRH-10PH(71)	10	20.6	
109-0869-9-71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

Remark: For mounting holes, see page 60.

Receptacle



RM21TR-15P(71)



(An example in shape)

HRS No.	Part No.	No of pins	φA	B	C	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	
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	○
109-0365-5-71	RM31TR-40P(71)	40	37	TM35×2	M32×0.75	34	
109-0367-0-71	RM31TR-40S(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	

Remarks: 1. TM25X2 is shown trapezoidal thread of 30°.
2. For mounting holes, see page 60.

Tool

Hexagon Wrench Screwdriver

PB 205/1.27

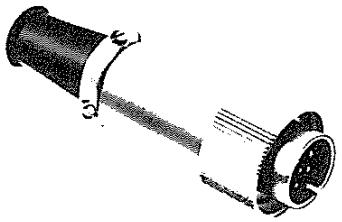
HRS No.	Part No.	Remark
150–0066–3	PB205/1.27	

RM15T(D Type) connectors

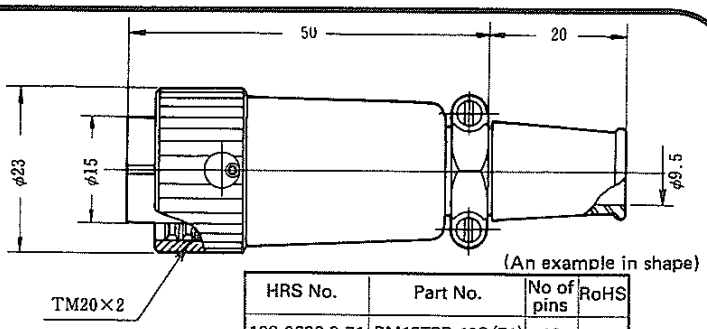
The RM15T (model D) connectors are designed for high grade of commercial applications such as VTR. These connectors boast a highly refined design.
Since the model D uses locking threads of 30° trapezoidal threads, it is incompatible with the RM15T connectors.

Plug

(Solder Type)



RM15TPD-10P(71)

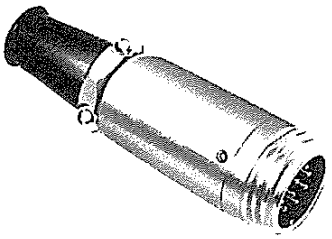


(An example in shape)

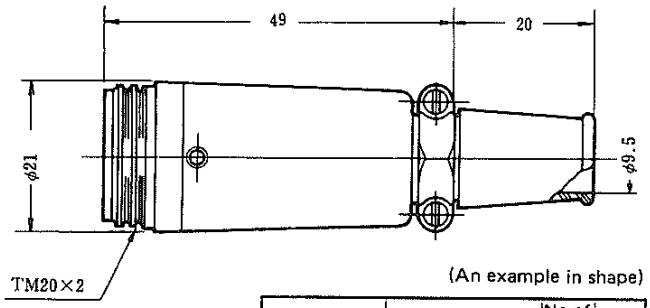
HRS No.	Part No.	No of pins	RoHS
109-0686-9-71	RM15TPD-10S(71)	10	○
109-0601-6-71	RM15TPD-10P(71)	10	
109-0660-5-71	RM15TPD-12P(71)	12	
109-0661-8-71	RM15TPD-12S(71)	12	

Jack

(Solder Type)



RM15TJD-10P(71)

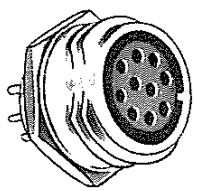


(An example in shape)

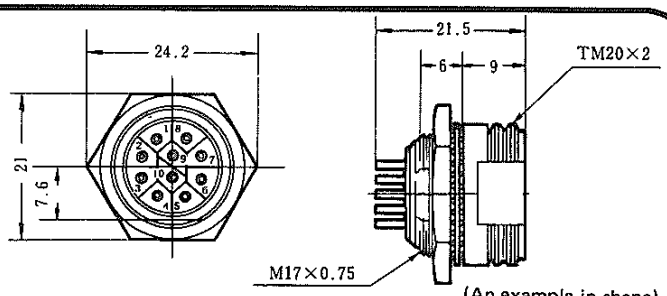
HRS No.	Part No.	No of pins	RoHS
109-0706-4-71	RM15TJD-10P(71)	10	○
109-0603-1-71	RM15TJD-10S(71)	10	
109-0715-5-71	RM15TJD-12P(71)	12	
109-0665-9-71	RM15TJD-12S(71)	12	

Receptacle

(Solder Type)



RM15TRD-10S(71)



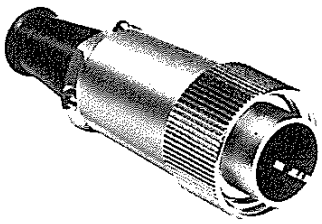
(An example in shape)

HRS No.	Part No.	No of pins	RoHS
109-0687-1-71	RM15TRD-10P(71)	10	○
109-0602-9-71	RM15TRD-10S(71)	10	
109-0662-0-71	RM15TRD-12P(71)	12	
109-0663-3-71	RM15TRD-12S(71)	12	

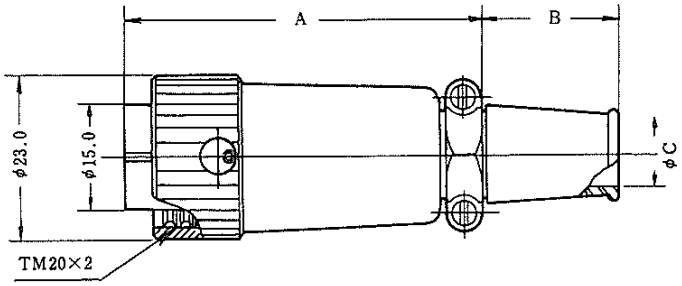
Remark: For mounting holes, see page 60.

Plug

(Crimp Type)



RM15TPD-10PC(71)

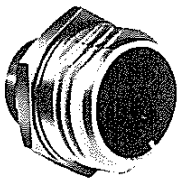


(An example in shape)

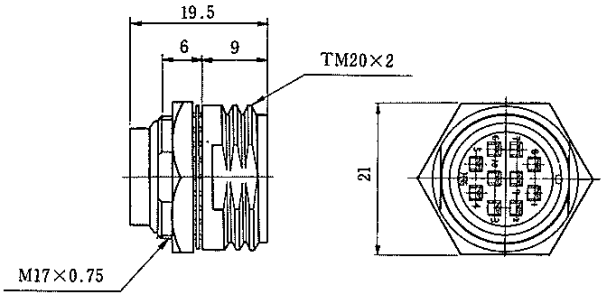
HRS No.	Part No.	No of pins	A	B	φC	RoHS
109-0677-8-71	RM15TPD-10PC(71)	10	50	20	9.5	○
109-0712-7-71	RM15TPN-10PC(71)	10	40	15	8	

Receptacle

(Crimp Type)



RM15TRD-10SC(71)

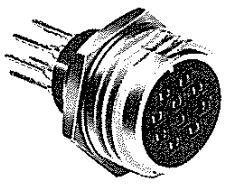


HRS No.	Part No.	No of pins	RoHS
109-0676-5-71	RM15TRD-10SC(71)	10	○

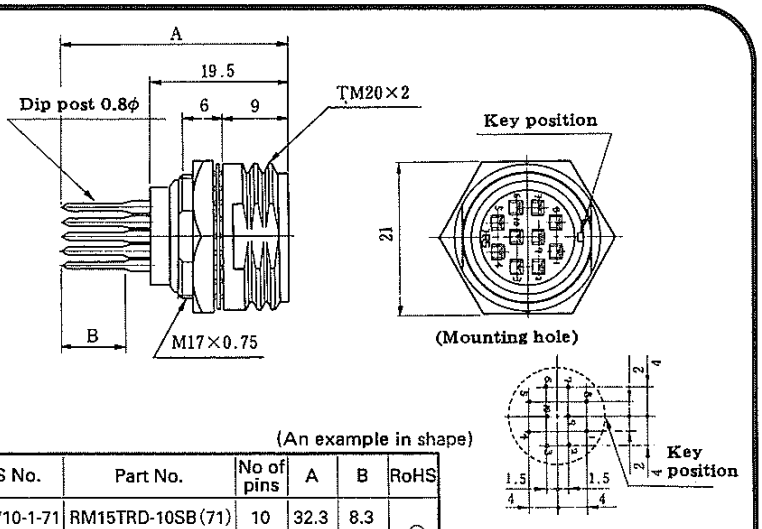
Remark: For mounting holes, see page 60.

Receptacle

(Dip Type)



RM15TRD-10SB(71)



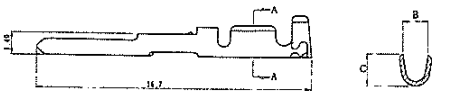
(An example in shape)

HRS No.	Part No.	No of pins	A	B	RoHS
109-0710-1-71	RM15TRD-10SB(71)	10	32.3	8.3	○
109-0722-0-71	RM15TRD-10SD(71)	10	27.8	3.8	

Remark: For mounting holes, see page 60.

■Contact

Pin contact

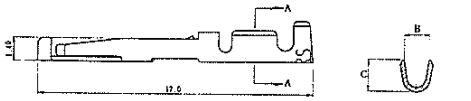


SectionA—A

Fig—1

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

Socket contact



SectionA—A

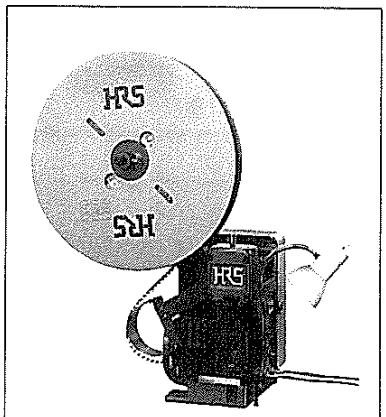
Fig—2

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

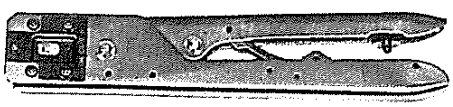
Note: Loose-piece pins are available in pack.
Each pack contains 100 pieces.
Reel pins are available, one reel contains 8,000 pieces.

◆Tools

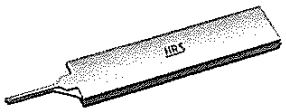
Type	Item	HRS No.	Part No.	Applicable terminal	Applicable wire
Manual	Manual crimping tool	150-0006-1	RM-TC-11	RM-PC-112	AWG#20~#24
				RM-SC-112	
		150-0007-4	RM-TC-12	RM-PC-122	AWG#24~#28
				RM-SC-122	
Automatic	Automatic crimping machine body	901-0005-4	CM-105	—	—
	Applicator	901-2017-4	AP105-RM-1	RM-PC-212	AWG#20~#24
				RM-SC-212	
		901-2018-7	AP105-RM-2	RM-PC-222	AWG#24~#28
				RM-SC-222	
Extraction		150-0008-7	RM-TP	—	—



Auto Crimp Tool CM—105



Hand Crimp Tool



Extraction Tool

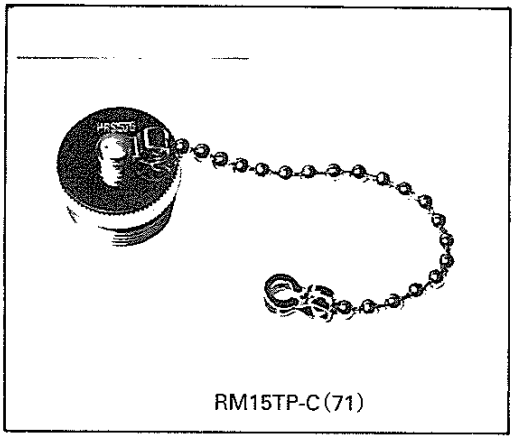
RM Series accessories

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

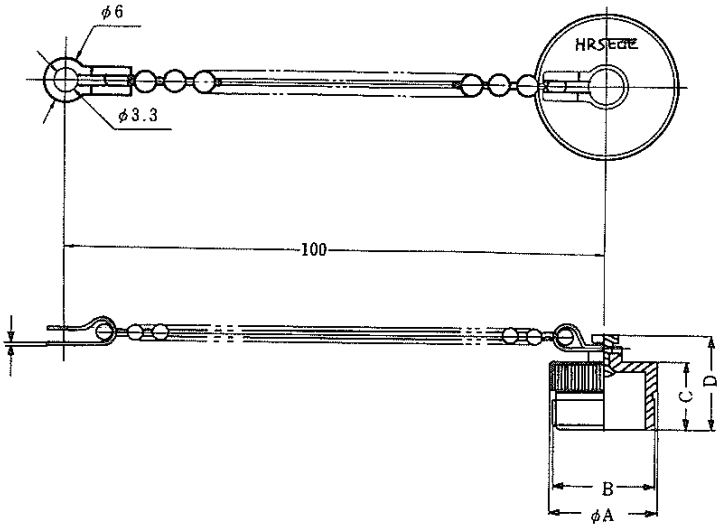
Caps

The cap protects the mating surface and threads of the connector and prevents dust and water from entering.
The cap is designed for both the standards and waterproof connector.

Plug cap



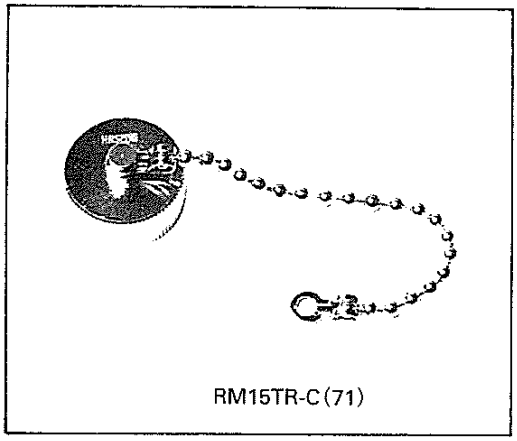
RM15TP-C(71)



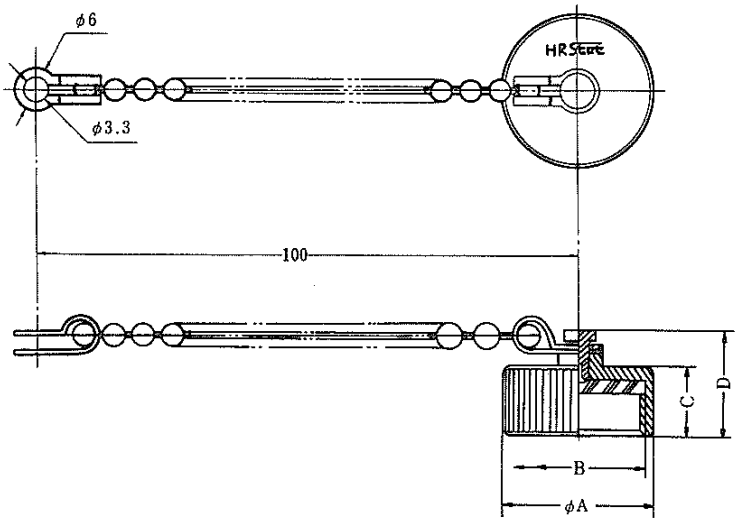
(An example in shape)

HRS No.	Part No.	φA	B	C	D	RoHS
109-0079-6-71	RM15TP-C(71)	21.5	M19×1	12	16.5	○
109-0353-6-71	RM21TP-C(71)	28	TM25×2	17.5	22	

Receptacle cap



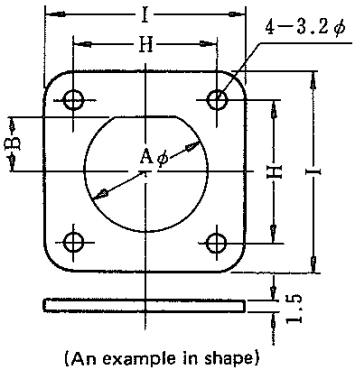
RM15TR-C(71)



(An example in shape)

HRS No.	Part No.	φA	B	C	D	RoHS
109-0080-5-71	RM15TR-C(71)	21.5	M19×1	9	13.5	○
109-0354-9-71	RM21TR-C(71)	28	TM25×2	8	12.5	
109-0492-2-71	RM24TR-C(71)	32	TM29×2	8.5	13	
109-0394-3-71	RM31TR-C(71)	38	TM35×2	8.5	13	

Square Flange

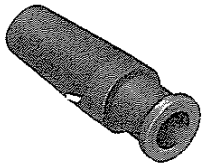


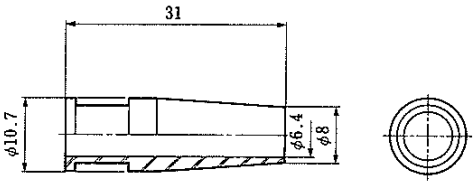
(An example in shape)

Square Flange is used with Bayonet Lock type receptacle.

HRS No.	Part No.	φA	B	H	I	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


RM12BPG-B(71)

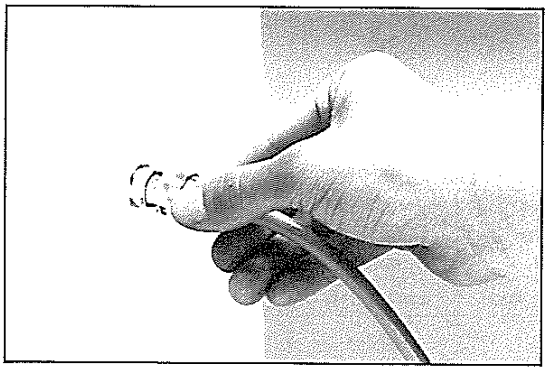


HRS No.	Part No.	Remark	RoHS
109-0776-0-71	RM12BPG-B(71)		○

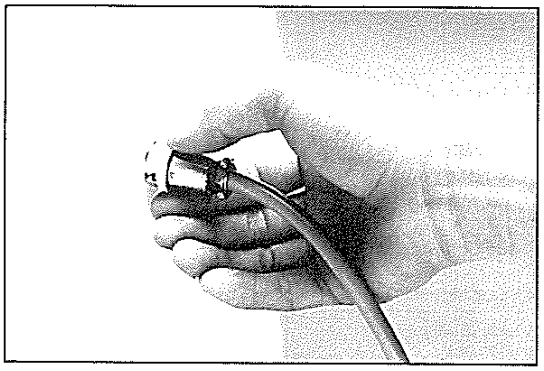
How to use the RM15Q Connectors

(Quick insertion and extraction system)

1. Insertion


Holding the plug body, match the key with the key-way on the receptacle and push straight in. Turn plug 30° to the right, coupling is completed.

2. Extraction

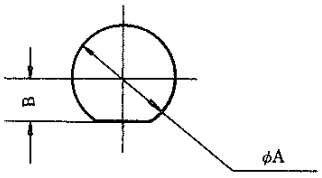

Holding plug sleeve, twist it 30 degrees to the left. Then, pull it straight for easy releasing.

Dimensions of mounting holes

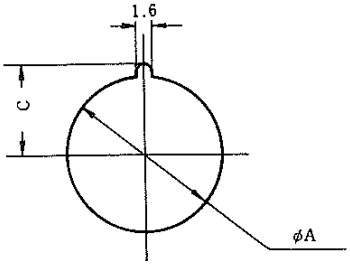
For your reference, the dimensions of receptacle mounting holes are given below for different shell sizes for the nut-tightening type and square-flange type.
In the case of the nut-tightening type, the dimensions of a standard connector are the same as those of a waterproof connector. The dimensions 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

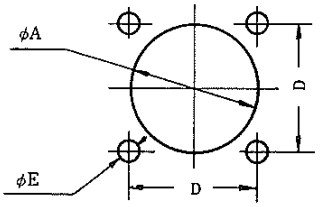
Mounting holes, for shell sizes 12, 15



Mounting holes, for shell sizes 21, 24, 31



Square flange type



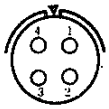
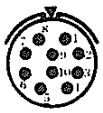
Remark: Use a 0.5 ~ 2 mm thickness panel for all shell sizes.

Mounting method / Shell size / Locking mechanism / Sign	Nut tightening						Square flange
Shell size	12	15		21	24	31	12
Sign	BRD•WBR	QRD	TRH•TRD•WTR	TR•WTR			BRB
φA	14.1	17.1	17.1	22.1	26.1	32.1	14.5
B	6.1	7.6	7.6	—	—	—	—
C	—	—	—	13.3	14.6	18.3	—
D	—	—	—	—	—	—	16
φE	—	—	—	—	—	—	2.9

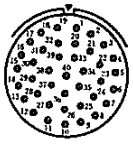
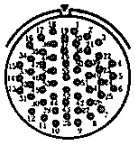
RM Series contact arrangement

Shell size	12					
						
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	4mΩ or less	4mΩ or less	4mΩ or less	4mΩ or less	4mΩ or less
Inside diameter of solder pot	φ1.1	φ1.1	φ1.1	φ1.1	φ1.1	φ1.1

Contact arrangement

Shell size	15				
					
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	ϕ1.7	ϕ1.7	ϕ1.1	ϕ1.1	ϕ1.1

Shell size	21		Shell size	24
				
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	ϕ1.1	Inside diameter of solder pot	ϕ1.1

Shell size	31	
		
Contact arrangement number	40	55
Withstanding voltage	AC1800V for a minute	AC1500V for a minute
Current rating	5A	5A
Insulation resistance	1000MΩ or more	1000MΩ or more
Contact resistance	4mΩ or less	4mΩ or less
Inside diameter of solder pot	ϕ1.1	ϕ1.1

Remarks:

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