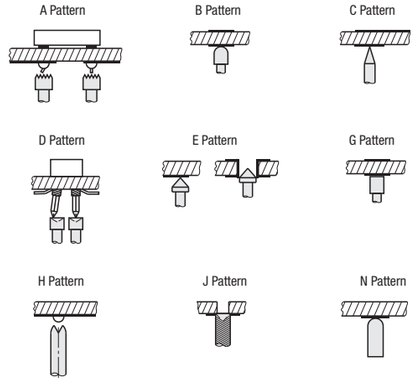
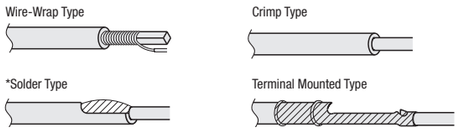
# Contact Probes

## Overview

### Contact Probe Tip Shapes & Patterns

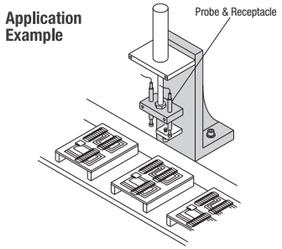



### Receptacle End Shapes




*Solder Type (C Type and NR68S) will not have a smooth surface and the end receptacles due to its manufacturing method. That will present no problem as long as the probe is pushed in firmly, but the O.D. adjustments are allowed as needed.

### Application Example




### General Environmental Conditions

– Operating Temperature 10–40°C, Humidity 30% or Less
– Operating Atmosphere: Free of dust, corrosive gases and oil components etc., where the contact probe may not be contaminated.

### Stroke Conditions

– Apply load in the axial direction only. Do not apply lateral load.
– Stroking over the specified stroke (2/3 of full stroke) will significantly decrease the lifetime of the Contact Probe.
– Stroking over 60 times per min (constant velocity) may decrease the lifetime of the Contact Probe.

### Electrical Current Application Conditions

– Apply current only after contact is made and the part is seated.
– Applying current while stroking, with irregular strokes, or in open state where the contact subject is not contacted will severely decrease the lifetime of Contact Probes.
– Allowable current shown in the catalog may not be sufficient due to contact probe deterioration. Consider actual applications carefully in the designing stage.

### Voltage Application Conditions

– Apply current only after contact is made and the part is seated.
– Do not energize probes in open state (workpiece is not in contact with probes). Discharge before contacting will result in damage to Contact Probes.
– When applying high voltage to a contact probe, be sure to satisfy Electrical Current Application Conditions and Voltage Application Conditions, and be careful of instantaneous large current including discharge.

### Allowable Current

– Allowable current provided in the catalog is the maximum continuous current for 1 min, under the following conditions, General Environment, Stroke, Current Application, and Voltage Application Conditions.

### Resistance

– Resistance value provided in the catalog is the representative value at rest with 2/3 of full stroke when 10 mA current flows under the following conditions, General Environment, Stroke, Current Application, and Voltage Application Conditions.
– Large current may cause deterioration of contact and inner parts, resulting in resistance value increase.
– Stroke cycles repetition may cause deterioration of contact and inner parts, resulting in an increase of resistance value.

### Replacement Cycle (Reference)

– Replacement Cycle provided in the catalog is the typical value when a probe works properly at 10 mA current under the following conditions, General Environment, Stroke, Current Application, and Voltage Application Conditions.
– Replacement cycle can vary depending on operating environment and conditions including resistance increase and spring pressure decrease. Replace Contact Probes considering actual application conditions.

### Spring Pressure

– Spring pressure decreases if temperature of contact probe is higher than 80ºC.
– Spring pressure may decrease due to heat generation of a contact probe at larger current.

### Mounting Hole for Receptacle (Press-Fit, for Reference Only)

– The values provided are for reference. Appropriate dimensions vary depending on material and thickness of resin plate. Please take the dimensions of receptacle press fit part as a guide for your design.







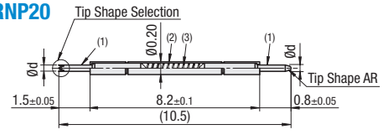
# Probes with Tip on Both Ends

## For IC Test Socket

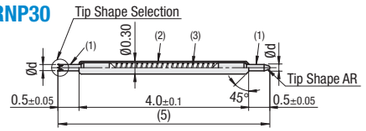
**Probes with Tip on Both Ends – For IC Test Socket**

RoHS 10

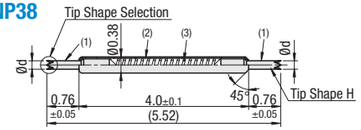
### RNP20



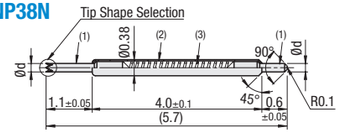

### RNP30




### RNP38



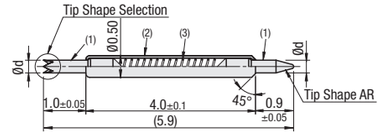

### RNP38N



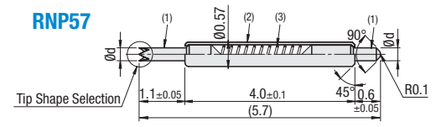

| No. | Parts | Material | Surface Treatment |
|---|---|---|---|
| (1) | Plunger | JIS-C1730B | Gold Plating on Nickel Undercoat |
| (2) | Barrel | Brass* | Gold Plating on Nickel Undercoat* |
| (3) | Spring | Spring Steel | Gold Plating |

*RNP30 and 38 are treated with gold plating on phosphor bronze.
RNP38N is treated with gold clad plating and RNP57 is treated with gold plating on German silver, nickel undercoat.
RNP60ST and 80ST are treated with gold plating on JIS-C1730B nickel undercoat.
Tip or RNP20 is W1-9 Tool Steel, the material of barrel is gold clad.

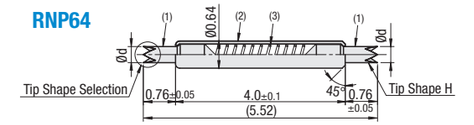
### RNP50



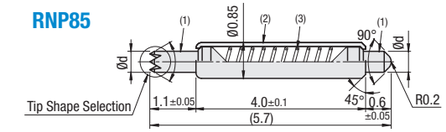

### RNP57




### RNP64

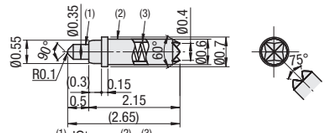



### RNP85



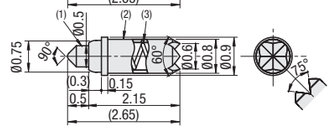

### RNP60ST

(High-Frequency Compatible)
⊗ Tip Shapes cannot be specified.



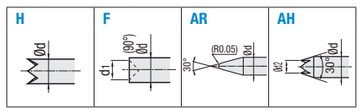

### RNP80ST

(High-Frequency Compatible)
⊗ Tip Shapes cannot be specified.



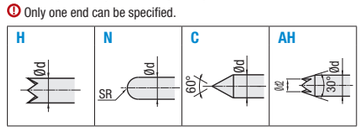

### RNP30, RNP38, RNP50, RNP64 Tip Shapes

Only one end can be specified.



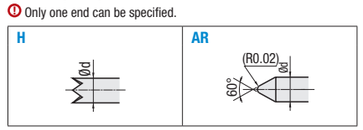

### RNP38N, RNP57, RNP85 Tip Shapes

Only one end can be specified.




### RNP20 Tip Shapes

Only one end can be specified.




| Part Number Type | No. | Mounting Pitch (min.) | Full Stroke (mm) | Spring Pressure Initial | Spring Pressure 2/3 Stroke | Allowable Current | Resistance | Ref. Replacement Usage Cycles | d | $d_1$ | $d_2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RNP | 20 | 0.3 mm | 1.3 | 2 gf | 6 gf | 0.5 A | 300 mΩ | 60,000 times | 0.12 | — | — |
| | 30 | 0.5 mm | 0.8 | 3 gf | 15 gf | | 60 mΩ | 100,000 times | 0.15 | 0.1 | 0.1 |
| | 38 | | 1.0 | 5 gf | 15 gf | | | 200,000 times | 0.2 | 0.15 | 0.15 |
| | 38N | | 0.98 | 5 gf | 25 gf | | | 100,000 times | 0.22 | — | 0.15 |
| | 50 | 0.8 mm | 1.0 | 3 gf | 25 gf | 1 A | 50 mΩ | 200,000 times | 0.3 | 0.2 | 0.2 |
| | 57 | | 0.98 | 13 gf | 30 gf | | | | 0.3 | — | 0.2 |
| | 64 | | 1.0 | 20 gf | 30 gf | | | 300,000 times | 0.38 | 0.3 | 0.25 |
| | 85 | 1.0 mm | 0.98 | 22 gf | 35 gf | | | 200,000 times | 0.50 | — | 0.3 |
| | 60ST | 0.8 mm | 0.5 | 10 gf | 25 gf | | | 100,000 times | — | | |
| | 80ST | 1.0 mm | 0.5 | 11 gf | 30 gf | | | | | | |

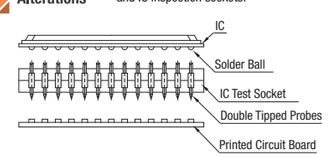
### Part Number Example

| Part Number | - | Tip Shape |
|---|---|---|
| RNP20 | - | AR |
| RNP85 | - | N |
| RNP60ST | | |

**Features:** Since there is continuity at both ends of the probe, ICs themselves can be tested before assembled onto IC boards.

### Part Number Alterations

Used for inspecting boards and IC inspection sockets.




### Reference: Barrel Hole Diameter Tolerance

| Part Number | Barrel Outside Diameter | Reference Barrel Hole Diameter |
|---|---|---|
| RNP20 | 0.20 | 0.22 |
| RNP30 | 0.30 | 0.32 |
| RNP38 | 0.38 | 0.40 |
| RNP38N | 0.38 | 0.40 |
| RNP50 | 0.50 | 0.52 |
| RNP57 | 0.57 | 0.59 |
| RNP64 | 0.64 | 0.66 |
| RNP85 | 0.85 | 0.87 |
| RNP60ST | 0.6 | 0.65 |
| RNP80ST | 0.8 | 0.85 |