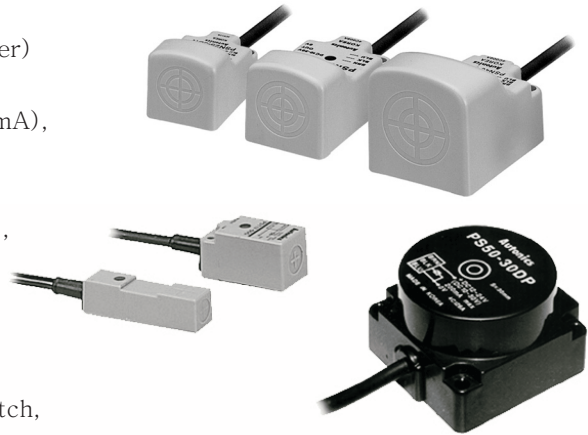


PS/PSN Series

Cost effective, long life cycle and high reliability, Square type proximity sensor

■ Features

- Enhanced noise-resistance by using exclusive IC (DC power)
- Upgraded DC2-wire type :
Residual voltage (Max. 4VDC), Control output range (2-100mA),
Operation voltage (10-30VDC)
- Polarity free DC2-wire type
- Reverse polarity protection and overload protection (DC),
surge absorption (DC/AC)
- Driving max. 200mA load directly within rated power
supply (DC 3-wire, AC 2-wire type)
- Operation confirmed easily by a red indicator lamp
- Wide range of applications (for replacement of micro switch,
limit switch, etc.)
- IP67 (IEC standard)



⚠ Please read "Caution for your safety" in operation manual before using.



■ Specifications

● DC 3-wire type

| Model | PS12-4DN PS12-4DP PS12-4DN2 PS12-4DNU PS12-4DPU PS12-4DN2U | PS17-5DN PS17-5DP PS17-5DN2 PS17-5DNU PS17-5DPU PS17-5DN2U PS17-5DN-F | PS17-8DN PS17-8DP PS17-8DN2 PS17-8DNU PS17-8DPU | PS17-8DN-F PS17-8DP-F PS17-8DN2-F PS17-8DNU-F PS17-8DPU-F PS17-8DN2U-F | PSN25-5DN PSN25-5DP PSN25-5DN2 PSN25-5DP2 | PSN30-10DN PSN30-10DP PSN30-10DN2 PSN30-10DP2 | PSN30-15DN PSN30-15DP PSN30-15DN2 PSN30-15DP2 | PSN40-20DN PSN40-20DP PSN40-20DN2 PSN40-20DP2 | PS50-30DN PS50-30DP PS50-30DN2 PS50-30DP2 |
|----------------------------------|---|---|---|---|---|--|--|--|--|
| Detecting distance | 4mm ±10% | 5mm ±10% | 8mm ±10% | 5mm ±10% | 10mm ±10% | 15mm ±10% | 20mm ±10% | 30mm ±10% | |
| Hysteresis | Max. 10% of detecting distance | | | | | | | | |
| Standard detecting target | 12×12×1mm (Iron) | 18×18×1mm (Iron) | 25×25×1mm (Iron) | | | 30×30×1mm (Iron) | 45×45×1mm (Iron) | 60×60×1mm (Iron) | 90×90×1mm (Iron) |
| Setting distance | 0~2.8mm | 0~3.5mm | 0~5.6mm | 0~3.5mm | 0~7mm | 0~10.5mm | 0~14mm | 0~21mm | |
| Power supply (Operation voltage) | 12-24VDC (10-30VDC) | | | | | | | | |
| Leakage current | Max. 10mA | | | | | | | | |
| Response frequency | 500Hz | 700Hz | 200Hz | 300Hz | 250Hz | 200Hz | 100Hz | 50Hz | |
| Residual voltage | Max. 1.5V | | | | | | | | |
| Affection by Temp. | ±10% Max. for detecting distance at +20°C within temperature range of -25 ~ +70°C | | | | | | | | |
| Control output | 200mA | | | | | | | | |
| Insulation resistance | Min. 50MΩ (at 500VDC) | | | | | | | | |
| Dielectric strength | 1500VAC 50/60Hz for 1 minute | | | | | | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours | | | | | | | | |
| Shock | 500m/s ² (50G) X, Y, Z directions for 3 times | | | | | | | | |
| Indicator | Operation indicator (Red LED) | | | | | | | | |
| Ambient temperature | -25 ~ +70°C (at non-freezing status) | | | | | | | | |
| Storage temperature | -30 ~ +80°C (at non-freezing status) | | | | | | | | |
| Ambient humidity | 35~95%RH | | | | | | | | |
| Protection circuit | Surge protection circuit, Reverse polarity protection | | | | Surge protection circuit, Reverse polarity protection, Overload & short circuit protection | | | | |
| Protection | IP67 (IEC specification) | | | | | | | | |
| Approval | CE | | | | | | | | |
| Weight | Approx. 62g | Approx. 71g | Approx. 70g | | Approx. 111g | | Approx. 158g | Approx. 220g | |

Rectangular Type

■ Specifications

● DC 2-wire type


*A blacked() item is upgraded function.

| Model(※1) | PST17-5DO PST17-5DC PST17-5DO-NP PST17-5DC-NP | PST17-5DOU PST17-5DCU PST17-5DOU-NP PST17-5DCU-NP |
|---|---|--|
| Detecting distance | 5mm ±10% | |
| Hysteresis | Max. 10% of detecting distance | |
| Standard detecting target | 18×18×1mm (Iron) | |
| Setting distance | 0 ~ 3.5mm | |
| Power supply (Operation voltage) | 24VDC (10-30VDC) | |
| Leakage current | Max. 1.5mA | |
| Response frequency | 700Hz | |
| Residual voltage(※2) | Max. 4V | |
| Affection by Temp. | ±10% Max. of detecting distance at +20℃ within temperature range of -25 ~ +70℃ | |
| Control output | 2~100mA | |
| Insulation resistance | Min. 50MΩ (at 500VDC) | |
| Dielectric strength | 1500VAC 50/60Hz for 1 minute | |
| Vibration | 1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours | |
| Shock | 500m/s ² (50G) in X, Y, Z directions for 3 times | |
| Indicator | Operation indicator (Red LED) | |
| Ambient temperature | -25 ~ +70℃ (at non-freezing status) | |
| Storage temperature | -30 ~ +80℃ (at non-freezing status) | |
| Ambient humidity | 35 ~ 95%RH | |
| Protection circuit | Surge protection circuit | |
| Protection | IP67 (IEC specification) | |
| Approval | CE | |
| Weight | Approx. 69g | |

(※1) The "-NP" is for non-polar type.

(※2) For non-polar type, the residual voltage is below 5V.

● AC 2-wire type

| Model | PSN25-5AO PSN25-5AC | PSN30-10AO PSN30-10AC | PSN30-15AO PSN30-15AC | PSN40-20AO PSN40-20AC |
|-------------------------------------|---|--------------------------|--------------------------|--------------------------|
| Detecting distance | 5mm ±10% | 10mm ±10% | 15mm ±10% | 20mm ±10% |
| Hysteresis | Max. 10% of detecting distance | | | |
| Standard detecting target | 25×25×1mm (Iron) | 30×30×1mm (Iron) | 45×45×1mm (Iron) | 60×60×1mm (Iron) |
| Setting distance | 0 ~ 3.5mm | 0 ~ 7mm | 0 ~ 10.5mm | 0 ~ 14mm |
| Power supply (Operation voltage) | 100-240VAC (85-264VAC) | | | |
| Leakage current | Max. 2.5mA | | | |
| Response frequency | 20Hz | | | |
| Residual voltage | Max. 10V | | | |
| Affection by Temp. | ±10% Max. of detecting distance at +20℃ within temperature range of -25 ~ +70℃ | | | |
| Control output | 5~200mA | | | |
| Insulation resistance | Min. 50MΩ (at 500VDC) | | | |
| Dielectric strength | 1500VAC 50/60Hz for 1 minute | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours | | | |
| Shock | 500m/s ² (50G) in X, Y, Z directions for 3 times | | | |
| Indicator | Operation indicator (Red LED) | | | |
| Ambient temperature | -25 ~ +70℃ (at non-freezing status) | | | |
| Storage temperature | -30 ~ +80℃ (at non-freezing status) | | | |
| Ambient humidity | 35 ~ 95%RH | | | |
| Protection circuit | Surge protection circuit | | | |
| Protection | IP67 (IEC specification) | | | |
| Approval | CE  | | | |
| Weight | Approx. 65g | Approx. 106g | Approx. 152g | Approx. 152g |

(A)
Counter

(B)
Timer

(C)
Temp.
controller

(D)
Power
controller

(E)
Panel
meter

(F)
Tacho/
Speed/
Pulse
meter

(G)
Display
unit

(H)
Sensor
controller

(I)
Proximity
sensor

(J)
Photo
electric
sensor

(K)
Pressure
sensor

(L)
Rotary
encoder

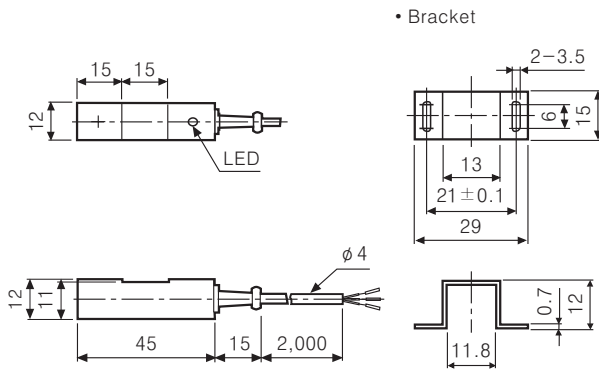
(M)
5-Phase
stepping
motor &
Driver &
Controller

PS/PSN Series

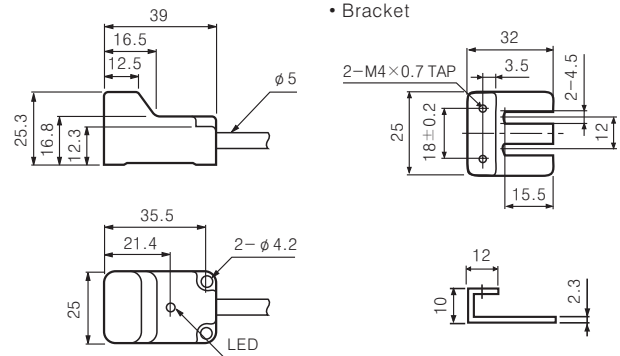
■ Dimensions

Unit:mm

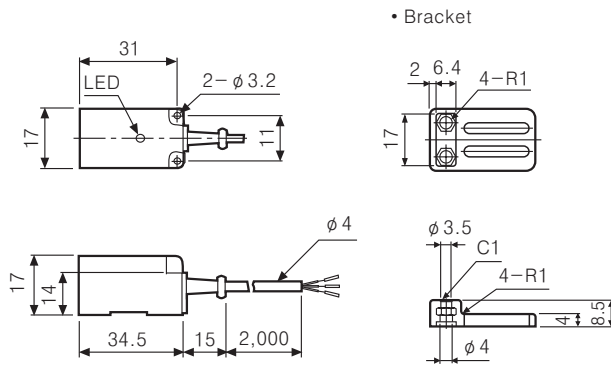
●PS12



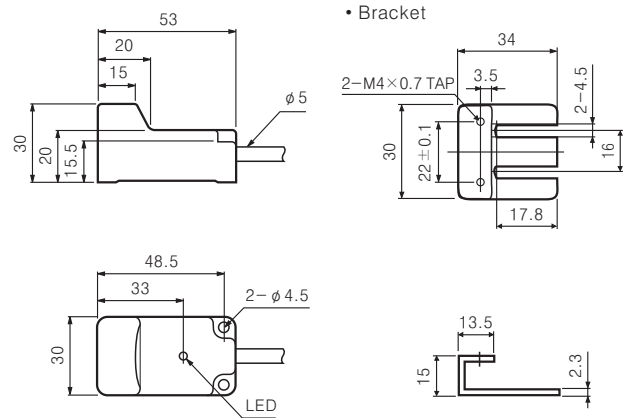
●PSN25



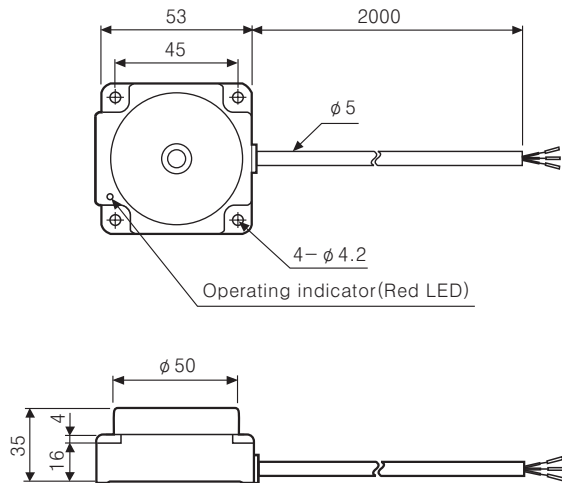
●PS17 / PST17



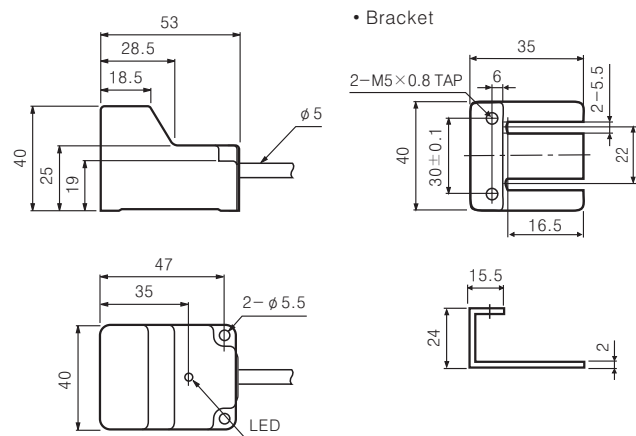
●PSN30



●PS50



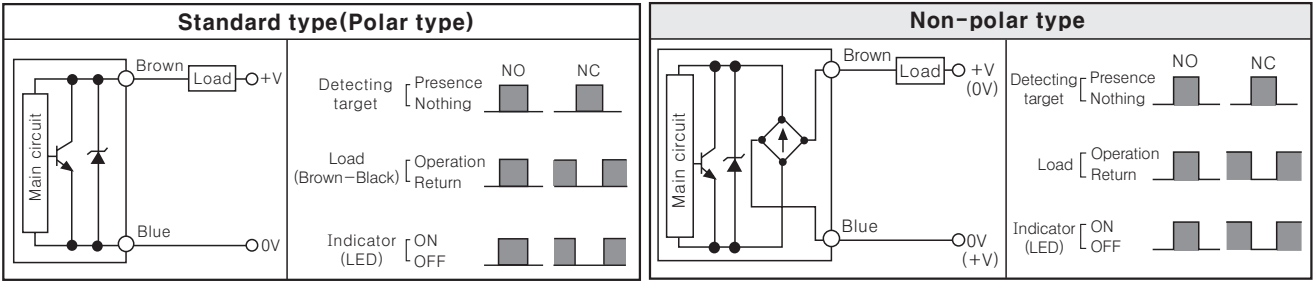
●PSN40



Rectangular Type

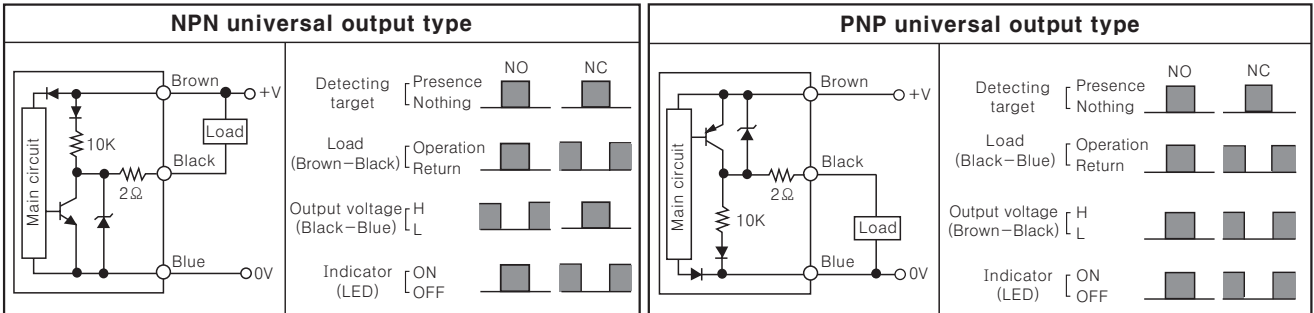
Control output diagram

DC 2-wire type

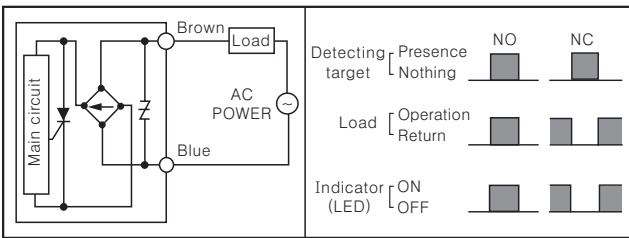


※It is connectable without affecting polarity.

DC 3-wire type

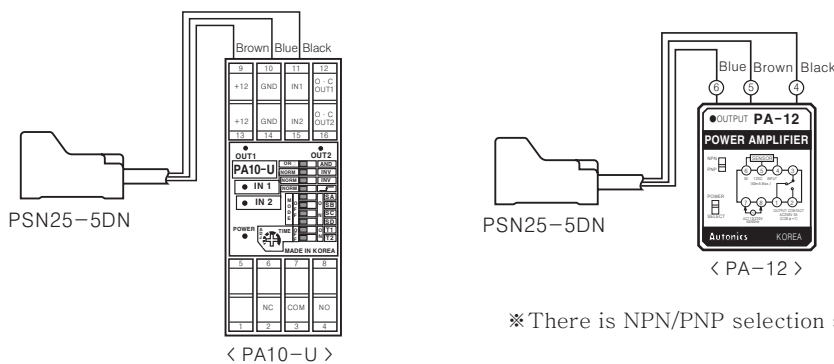


AC 2-wire type



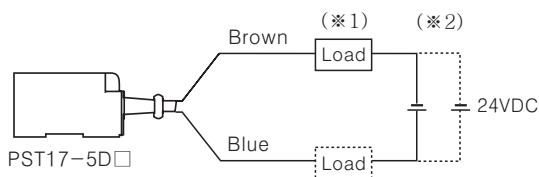
Connections

DC 3-wire type



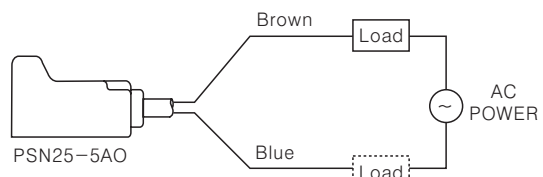
※There is NPN/PNP selection switch in PA-12.

DC 2-wire type



- ※1. The load is connectable without affecting polarity.
- ※2. For non-polar type, it is connectable without affecting polarity.

AC 2-wire type



※The load can be connected to any wire.

(A) Counter

(B) Timer

(C) Temp. controller

(D) Power controller

(E) Panel meter

(F) Tacho/Speed/Pulse meter

(G) Display unit

(H) Sensor controller

(I) Proximity sensor

(J) Photo electric sensor

(K) Pressure sensor

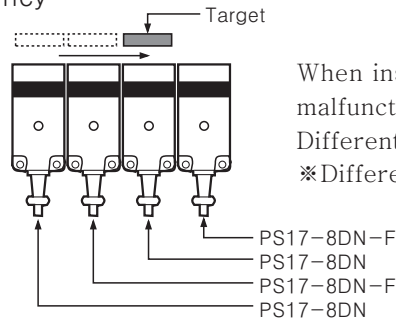
(L) Rotary encoder

(M) 5-Phase stepping motor & Driver & Controller

PS/PSN Series

■ Proper usage

◎ Differential frequency

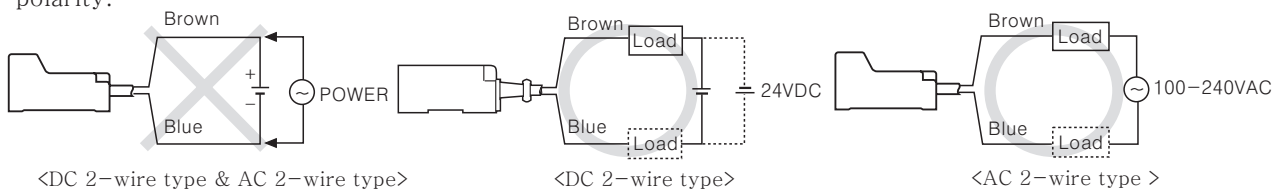


When install several proximity sensor near by, it may cause malfunction due to mutual interference. Therefore please use Differential frequency for the application.

※ Differential frequency type is only for 17 square.

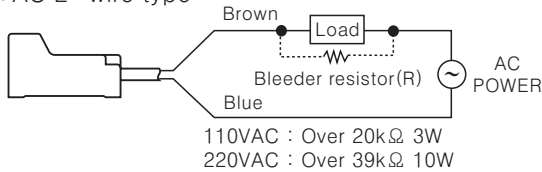
◎ Connection of the power supply

When using DC 2-wire and AC 2-wire type, a load must be connected before applying power; otherwise, components can be damaged. But for non-polar type of DC-2 wire type, it is connectable without affecting polarity.



◎ In case of the load current is small

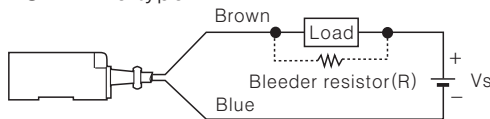
● AC 2-wire type



It may cause return failure of load by residual voltage.

If the load current is under 5mA, please make sure the residual voltage is less than the return voltage of the load by connecting a bleeder resistor in parallel with the load as shown in the diagram.

● DC 2-wire type



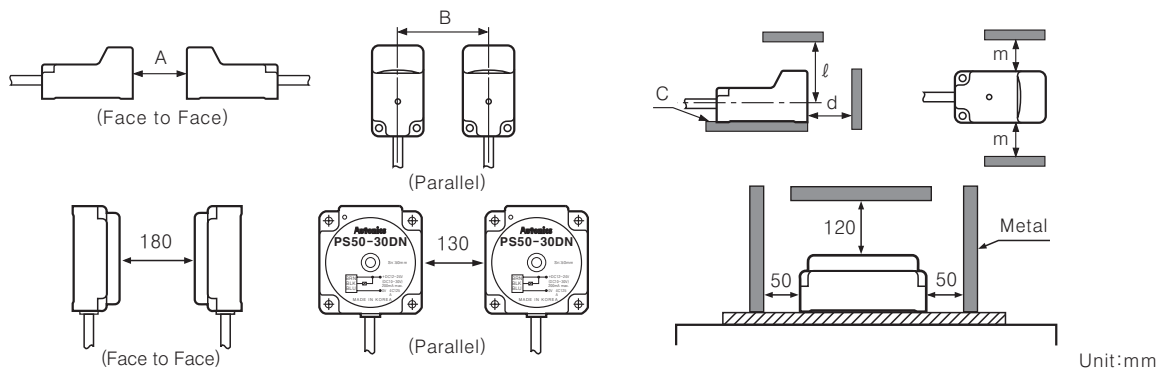
Please make the current on proximity sensor smaller than the return current of load by connecting a Bleeder resistor in parallel.
※ W value of Bleeder resistor should be bigger for proper heat dissipation.

$$R \leq \frac{V_s}{I_o - I_{off}} \text{ (k}\Omega\text{)} \quad P > \frac{V_s^2}{R} \text{ (mW)}$$

* V_s : Power supply P : Bleeder resistor, number of W
 I_o : Operating current 2mA of proximity sensor
 I_{off} : Return current of load

◎ Mutual-interference & Influence by surrounding metals

When several proximity sensors are mounted close together, malfunction of sensor may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors, as below.



| Item | Model | PS12 | PS17 | | PSN25 | PSN30 | | PSN40 |
|------|-------|------|------|-----|-------|-------|------|-------|
| | | 4mm | 5mm | 8mm | 5mm | 10mm | 15mm | 20mm |
| A | | 24 | 30 | 48 | 30 | 60 | 90 | 120 |
| B | | 24 | 36 | 40 | 40 | 50 | 85 | 70 |
| C | | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| d | | 12 | 15 | 24 | 15 | 30 | 45 | 60 |
| l | | 18 | 24 | 33 | 25 | 30 | 45 | 45 |
| m | | 12 | 18 | 20 | 20 | 25 | 35 | 35 |