e-Front runners

# COMMAND SWITCHES

## AR22•DR22/AR30•DR30
## AH164•AH165•AH165-2

## 16mm/22mm/30mm Diameter

USEH417

## Preface

Fuji Electric manufactures FUJI COMMAND SWITCHES-pushbutton, illuminated pushbutton, and selector switches, and pilot lights.
FUJI COMMAND SWITCHES are used in machine tools, industrial machines, control panels, distribution panels, and instrumentation panels both in Japan and overseas.
COMMAND SWITCHES improve interfacing with better layout and wiring, easier installation, and increased safety.
Raliability is of course, built in to handle complex multifunctional control.

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## ■ Command series

### AR22/DR22

AF94-320

- 22mm diameter hole
- Mountable even on panel cutout 25mm in diameter.
- Provided with newly developed release arm
- Provided with terminal cover for safety and security
- UL, CSA, TÜV and CCC approved

AF94-310

AF98-88

### AH164, 165

SK-1103

- 16mm diameter hole, finger-sized button
- Incandescent, neon and LED lamps are available.
- Block type contact
- AH165 series is oil-tight
- UL, CSA, TÜV and CCC approved

SK-1138

### AR30/DR30

AF95-4

- 30mm diameter hole
- Provided with terminal cover for safety and security
- UL, CSA, TÜV and CCC approved

AF95-6

AF98-195

### AH165-2

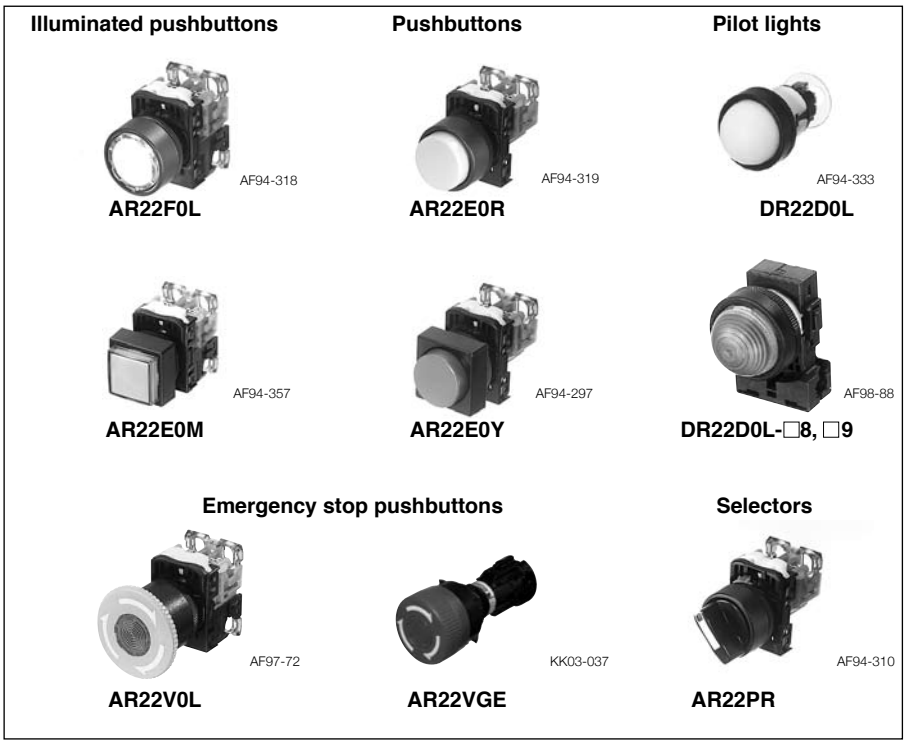
AF87-211

- 16mm diameter hole
- AH165-2 series are about twice as large as the AH165 series
- Incandescent, neon and LED lamps are available.
- Block type contact
- AH165-2 series is oil-tight
- UL, CSA, TÜV and CCC approved

AF87-208

# AR22 and DR22
# General information

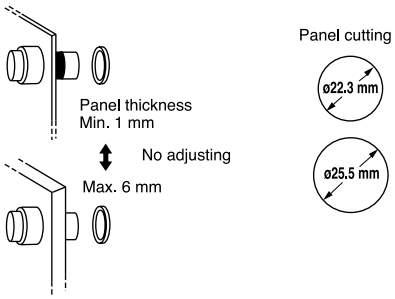
The AR22 now uses a release arm with a wedge mechanism developed by Fuji Electric FA. This enables you to mount or remove the operator and contact block without using any tools. When fitting the switch to a panel, you can ignore the panel thickness.
You have only to secure the operator with a locking nut from behind the panel without any need for adjustment. The improved locking nut is capable of mounting the operator in both 22.3mm and 25.5mm dia. panel cutout holes.




## ■ Features

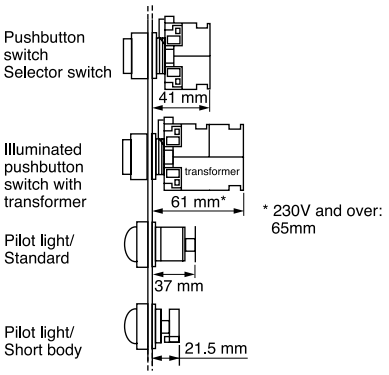
### Facilitated mounting

- No adjusting of panel thickness is necessary.
- The button and lens can be mounted on a panel while the operator is engaged.
- Mountable even on a panel cutout 25.5mm in diameter.



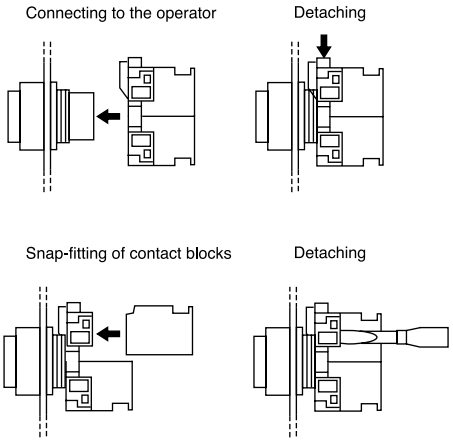

### Miniaturization

- Pushbuttons and selector switches with 1NO+1NC: 41mm deep
  Pilot lights: 37mm deep
- The transformer now occupies far less space.



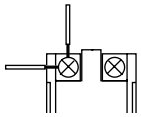

### Easy replacing contact block and transformer

- Because of a snap-on mounting, replacement or addition of the contact block and transformer unit is very simple.
- The contact block is common to all the pushbuttons of this series.
- Contact block is easily replaced even when the pushbuttons are mounted closely together.
- Replacement of the contact block can be done with a screwdriver, without the need for any special tool.




### Wiring

- Wiring from two directions is possible.
- Wiring in both vertical and lateral directions facilitates wiring in narrow spaces.
- Color coding of contact blocks makes wiring easy.
  1NO: Blue, 1NC: Red
  Lamp terminal and transformer unit: Black



### Safety

- A terminal cover is provided, assuring safety and security.
- FUJI's original Trigger Action mechanism is used in the emergency stop pushbuttons. They are suitable for emergency stop and safety. This mechanism prevents the contacts from moving until the button is pushed and locked.
- Reliability of safety functions increased by integrated operator and contact block construction. (AR22VG)

### Protection

- Excellent oil-tight construction (IP65) of the operator.
- Closure of the contact block has been improved.

## ■ Approvals

## ■ Illuminated pushbutton switches

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Flush round head | **AR22F0L, F5L** AF94-318 | Extended with full guard (24mm dia. with openings) | **AR22G2L, G7L** AF99-319 | Flush round head with square bezel | **AR22F0P, F5P** AF94-315 |
| Extended round head | **AR22E0L, E5L** AF94-317 | Extended with full guard (24mm dia.) | **AR22G1L, G6L** AF02-70 | Extended round head with square bezel | **AR22E0P, E5P** AF94-314 |
| Mushroom head (40mm dia.) | **AR22M0L, M5L** AF94-367 | Push-lock, turn-reset (40mm dia. with white arrow) | **AR22V5L** AF97-72 | Mushroom head with square bezel (29mm dia.) | **AR22M4P** AF94-440 |
| Mushroom head (29mm dia.) | **AR22M4L, M9L** AF94-369 | Flush square head | **AR22F0M, F5M** AF97-68 | | |
| Extended with transparent full guard (24mm dia.) | **AR22G4L, G9L** AF94-294 | Extended square head | **AR22E0M, E5M** AF94-357 | | |

## ■ Pushbutton switches

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Flush round head | **AR22F0R, F5R** AF94-320 | Flush round head Symbol mark type | **AR22FAR, FBR** AF98-193 | Mushroom head (40mm dia.) | **AR22M0R, M5R** AF94-293 |
| Extended round head | **AR22E0R, E5R** AF94-319 | Extended round head Symbol mark type | **AR22EAR, EBR** AF98-192 | Mushroom head (29mm dia.) | **AR22M4R, M9R** AF94-321 |

# AR22 and DR22
# Quick reference guide

## ■ Pushbutton switches

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Extended with full guard (24mm dia.) | **AR22G3R, G8R** AF94-292 | Pushbutton with selector ring (2-position) | **AR22S1R, S2R, S3R, S6R** AF97-507 | Flush round head with square bezel | **AR22F0Y, F5Y** AF94-295 |
| Flush with full guard (24mm dia.) | **AR22G2R, G7R** AF02-68 | Push-lock, turn-reset (40mm dia. with white arrow) | **AR22V5R** AF97-70 | Extended round head with square bezel | **AR22E0Y, E5Y** AF94-297 |
| Extended with half guard | **AR22G0R, G5R** AF96-236 | Flush square head | **AR22F0S, F5S** AF94-316 | Mushroom head with square bezel (29mm dia.) | **AR22M4Y** AF94-298 |
| Mushroom head with full guard (40mm dia.) | **AR22M3R, M8R** AF94-372 | Extended square head | **AR22E0S, E5S** AF94-296 | | |

Note: AR22M8R: Not approved standard

## ■ Emergency stop pushbutton switches (conform to EN418)

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) | **AR22V0R** AF97-70 | Push-lock, turn-reset (29mm dia.) | **AR22V4R** AF95-53 | Unibody push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) | **AR22VGE** KK03-037 |
| Push-lock, turn-reset (40mm dia.) *See page 04/23, 04/44* | **AR22V2R** AF94-432 | Key release push-lock, turn-reset (40mm dia.) | **AR22V7R** AF98-37 | | |
| Push-lock, turn-reset (Soft-touch 29mm dia. with white arrow) | **AR22VSR** AF99-317 | Push-lock, pull-reset (35mm dia.) | **AR22Q2R** AF95-52 | | |

Notes: Provided with the ⊖ (Direct opening action)

## ■ Emergency stop illuminated pushbutton switches (conform to EN418)

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) | **AR22V0L** AF97-72 | Push-lock, turn-reset (Soft-touch 40mm dia. transparent in all colors with white arrow) | **AR22VDL** AF97-77 | Push-lock, turn-reset (Soft touch 29mm dia. with white arrow) | **AR22VSL** AF99-316 |
| Push-lock, turn-reset (40mm dia.) | **AR22V2L** AF94-307 | Push-lock, turn-reset (40mm dia. transparent in all colors) | **AR22VAL** AF94-365 | Unibody push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) | **AR22VGF** KK03-036 |

Note: Provided with the ⊖ (Direct opening action)

## ■ Selector switches

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Knob | **AR22PR, PCR** AF94-310 | Key | **AR22JR, JCR** AF94-311 | Lever with square beze | **AR22WY, WCY** AF94-323 |
| Lever | **AR22WR, WCR** AF94-324 | Key (Long durability) | **AR22JAR** AF94-311 | Cylindrical knob with square bezel | **AR22RY, RCY** AF94-362 |
| Cylindrical knob | **AR22RR, RCR** AF94-308 | Knob with square bezel | **AR22PY, PCY** AF94-309 | Key with square bezel | **AR22JY, JCY** AF94-322 |

## ■ Illuminated selector switches

| Operator | Type | Operator | Type |
|---|---|---|---|
| Knob | **AR22PL** AF94-306 | Knob with square bezel | **AR22PP** AF94-318 |

# AR22 and DR22
# Quick reference guide

## ■ Pilot lights

| Lens | Type | Lens | Type | Lens | Type |
|---|---|---|---|---|---|
| Dome | **DR22D0L** AF94-333 | Flush square | **DR22F3M** AF94-330 | Extended square | **DR22E3M** AF94-380 |
| Extended round | **DR22E3L** AF94-332 | Flush square (Transparent lens) | **DR22F4M** AF94-443 | Flush rectangular | **DR22E3N** AF96-237 |
| Faceted | **DR22K0L** AF96-189 | Flush square (12mm high frame) | **DR22F5M** AF95-658 | Extended round with square bezel | **DR22E3P** AF94-331 |

Note: With resistor unit type: Not approved standard

## ■ Joy stick selector switches

| Handle | Type | Handle | Type | Handle | Type |
|---|---|---|---|---|---|
| Ball type | **AR22A0, A5** AF97-49 | Ball type with lock | **AR22A1, A6** AF97-45 | Rubber cap type | **AR22A2, A7** AF97-56 |

## ■ Buzzers

| Sound | Type | Sound | Type | Sound | Type |
|---|---|---|---|---|---|
| Electronic sound | **DR22B5 *** AF96-377 | Magnetic sound | **DR22B3** AF96-376 | Electronic sound (IP54) | **DR22B8 *** AF96-244 |

Note: * 6V AC, 110V DC types: Not approved standard

## ■ Numerical indicators

| Display | Type | Display | Type |
|---|---|---|---|
| One-digit | **DR22N1** KK02-548 | Two-digit | **DR22N2** KK02-16B |

Discontinued

Discontinued

## Illuminated pushbuttons

**AR22 E0L – 10 E3 R □**
① ② ③ ④ ⑤ ⑥

① **Product category**
AR22: 22mm-dia. illuminated pushbutton
22mm-dia. emergency stop illuminated pushbutton

② **Operator**
• Illuminated pushbutton
F0L: Flush round head
F5L: Flush round head (Alternate)
E0L: Extended round head
E5L: Extended round head (Alternate)
M0L: Mushroom head (40mm dia.)
M5L: Mushroom head (40mm dia. alternate)
M4L: Mushroom head (29mm dia.)
M9L: Mushroom head (29mm dia. alternate)
G4L: Extended with transparent full guard (24mm dia.)
G9L: Extended with transparent full guard (24mm dia. alternate)
G2L: Extended with full guard (24mm dia. with openings)
G7L: Extended with full guard (24mm dia. with openings, alternate)
G1L: Extended with full guard (24mm dia.)
G6L: Extended with full guard (24mm dia. alternate)
V5L: Push-lock, turn-reset (40mm dia. with white arrow) *1
F0M: Flush square head
F5M: Flush square head (Alternate)
E0M: Extended square head
E5M: Extended square head (Alternate)
F0P: Flush round head with square bezel
F5P: Flush round head with square bezel (Alternate)
E0P: Extended round head with square bezel
E5P: Extended round head with square bezel (Alternate)
M4P: Mushroom head with square bezel (29mm dia.)
• Emergency stop illuminated pushbutton
V0L: Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow)
V2L: Push-lock, turn-reset (40mm dia.)
VDL: Push-lock, turn-reset (Soft-touch 40mm dia. transparent in all colors with white arrow)
VAL: Push-lock, turn-reset (40mm dia. transparent in all colors)
VSL: Push-lock, turn-reset (Soft-touch 29mm dia. with white arrow)
VGF: Unibody push-lock, turn-reset (Soft-touch 40mm dia. with white arrow)

③ **Contact arrangement**

| | |
|---|---|
| 10: 1NO | 30: 3NO |
| 01: 1NC | 03: 3NC |
| 11: 1NO+1NC | 40: 4NO |
| 20: 2NO | 04: 4NC |
| 02: 2NC | 50: 5NO |
| 22: 2NO+2NC | 05: 5NC |

④ **Lamp voltage**
•Incandescent lamp
54: 5.5V AC/DC, without transformer
C4: 15V AC/DC, without transformer
D4: 20V AC/DC, without transformer
E4: 24V AC/DC, without transformer
H4: 100-110V AC, with transformer
L4: 115-127V AC, with transformer
M4: 200-220V AC, with transformer
Q4: 230-254V AC, with transformer
S4: 350-380V AC, with transformer
T4: 400-440V AC, with transformer
V4: 480V AC, with transformer
W4: 500-550V AC, with transformer
•LED lamp
A3: 6V AC, without transformer
63: 6V DC, without transformer
B3: 12V AC/DC, without transformer
C3: 15V AC/DC, without transformer
E3: 24V AC/DC, without transformer
H3: 100-110V AC, with transformer
L3: 115-127V AC, with transformer
M3: 200-220V AC, with transformer
Q3: 230-254V AC, with transformer
S3: 350-380V AC, with transformer
T3: 400-440V AC, with transformer
V3: 480V AC, with transformer
W3: 500-550V AC, with transformer

•Neon lamp (For AR22VGF)
H1: 110V AC, without transformer
K1: 120V AC, without transformer
M1: 220V AC, without transformer
P1: 240V AC, without transformer

⑤ **Color of lens**

| | |
|---|---|
| G: Green | Y: Yellow |
| R: Red *2 | A: Orange |
| W: White | S: Blue |

⑥ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z8: With a contact protection cover
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards

Notes: *1 Products with no trigger action mechanism. These products cannot be used as emergency stop switches that comply with EN standards.
*2 Button color of emergency stop illuminated switches are Red only.
• The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

# AR22 and DR22
# Part number system

## Pushbuttons

**AR22 E0R – 10 R □ □**
① ② ③ ④ ⑤ ⑥

① **Product category**
AR22: 22mm-dia. pushbutton
22mm-dia. emergency stop pushbutton

② **Operator**
•Pushbutton switch
F0R: Flush round head
F5R: Flush round head (Alternate)
E0R: Extended round head
E5R: Extended round head (Alternate)
FAR: Flush round head (Symbol mark type)
FBR: Flush round head (Symbol mark type, alternate)
EAR: Extended round head (Symbol mark type)
EBR: Extended round head (Symbol mark type, alternate)
M0R: Mushroom head (40mm dia.)
M5R: Mushroom head (40mm dia. Alternate)
M4R: Mushroom head (29mm dia.)
M9R: Mushroom head (29mm dia. Alternate)
G3R: Extended with full guard (24mm dia.)
G8R: Extended with full guard (24mm dia. Alternate)
G2R: Flush with full guard (24mm dia.)
G7R: Flush with full guard (24mm dia. Alternate)
G0R: Extended with half guard
G5R: Extended with half guard (Alternate)
M3R: Mushroom head with full guard (40mm dia.)
M8R: Mushroom head with full guard (40mm dia. Alternate)
S1R: Push-button with selector ring (2-position)
S2R: Push-button with selector ring (2-position)
S3R: Push-button with selector ring (2-position)
S6R: Push-button with selector ring (2-position)
V5R: Push-lock, turn-reset (40mm dia. with white arrow) *1
F0S: Flush square head
F5S: Flush square head (Alternate)
E0S: Extended square head
E5S: Extended square head (Alternate)
F0Y: Flush round head with square bezel
F5Y: Flush round head with square bezel (Alternate)
E0Y: Extended round head with square bezel
E5Y: Extended round head with square bezel (Alternate)
M4Y: Mushroom head with square bezel (29mm dia.)
•Emergency stop pushbutton switch
V0R: Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow)
V2R: Push-lock, turn-reset (40mm dia.)
VSR: Push-lock, turn-reset (Soft-touch 29mm dia. with white arrow)
V4R: Push-lock, turn-reset (29mm dia.)
V7R: Key-release push-lock, turn-reset (40mm dia.)
Q2R: Push-lock, pull-reset (35mm dia.)
VGE: Unibody push-lock, turn-reset (Soft-touch 40mm dia. with white arrow)

③ **Contact arrangement**

| | |
|---|---|
| 10: 1NO | 30: 3NO |
| 01: 1NC | 03: 3NC |
| 11: 1NO+1NC | 33: 3NO+3NC |
| 20: 2NO | 40: 4NO |
| 02: 2NC | 04: 4NC |
| 22: 2NO+2NC | 50: 5NO |
| | 05: 5NC |

④ **Color of button**

| | |
|---|---|
| G: Green | Y: Yellow |
| R: Red*2 | A: Orange |
| B: Black | S: Blue |
| W: White | C: Clear (For AR22FAR, FBR, EAR, EBR) |
| T: Green, Red, Black (For AR22F0R) | |

⑤ **Symbol mark (For AR22FAR, FBR, EAR, EBR)**

| Symbol mark | ◯ | | I | | Ⓣ | | ◯ | I | Ⓣ |
|---|---|---|---|---|---|---|---|---|---|
| Color of button | White | Black | White | Black | White | Black | Clear | | |
| Color of mark | Red | | Green | | Green | | Black | | |
| Code | 01 | 02 | 03 | 04 | 11 | 12 | 02B | 04B | 12B |

⑥ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z8: With a contact protection cover
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards

Notes: *1 Products with no trigger action mechanism. These products cannot be used as emergency stop switches that comply with EN standards.
*2 Button color of emergency stop switches are Red only.
• The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

### Selector and illuminated selector switches

**AR22 PL – 2 □ 10 E3 G □ □**
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① **Product category**
AR22: 22mm dia. selector switch and illuminated selector switch

② **Operator**
•Selector switch
PR: Knob
PCR: Knob operated control type
WR: Lever
WCR: Lever operated control type
RR: Cylindrical knob
RCR: Cylindrical knob operated control type
JR: Key
JCR: Key operated control type
JAR: Key (Long durability)
PY: Knob with square bezel
PCY: Knob operated control type with square bezel
WY: Lever with square bezel
WCY: Lever operated control type with square bezel
RY: Cylindrical knob with square bezel
RCY: Cylindrical knob operated control type with square bezel
JY:Key with square bezel
JCY: Key operated control type with square bezel
•Illuminated selector switch
PL: Knob
PP: Knob with square bezel

③ **Operation**
2: 2-position, maintained
0: 2-position, spring return
3: 3-position, maintained
6: 3-position, spring/manual return (Left to center)
7: 3-position, spring/manual return (Right to center)
1: 3-position, spring return
4: 4-position, maintained (For AR22PCR, WCR, RCR)
5: 5-position, maintained (For AR22PCR, WCR, RCR)

④ **Key removable position**
A: Left
B: Left and right
C: Left, right and center
D: Right
E: Center
F: Right and center
G: Left and center

⑤ **Contact arrangement**

| | | | |
|---|---|---|---|
| 10: | 1NO | 30: | 3NO |
| 01: | 1NC | 03: | 3NC |
| 11: | 1NO+1NC | 33: | 3NO+3NC |
| 20: | 2NO | 40: | 4NO |
| 02: | 2NC | 04: | 4NC |
| 22: | 2NO+2NC | 50: | 5NO |
| | | 05: | 5NC |

⑥ **Lamp voltage**
•Incandescent lamp
54: 5.5V AC/DC, without transformer
C4: 15V AC/DC, without transformer
D4: 20V AC/DC, without transformer
E4: 24V AC/DC, without transformer
H4: 100-110V AC, with transformer
L4: 115-127V AC, with transformer
M4: 200-220V AC, with transformer
Q4: 230-254V AC, with transformer
S4: 350-380V AC, with transformer
T4: 400-440V AC, with transformer
V4: 480V AC, with transformer
W4: 500-550V AC, with transformer
•LED lamp
A3: 6V AC, without transformer
63: 6V DC, without transformer
B3: 12V AC/DC, without transformer
C3: 15V AC/DC, without transformer
E3: 24V AC/DC, without transformer
H3: 100-110V AC, with transformer
L3: 115-127V AC, with transformer
M3: 200-220V AC, with transformer
Q3: 230-254V AC, with transformer
S3: 350-380V AC, with transformer
T3: 400-440V AC, with transformer
V3: 480V AC, with transformer
W3: 500-550V AC, with transformer

⑦ **Color of knob**
B: Black (Not available for illuminated selector switch)
G: Green
R: Red
W: White (Not available for selector switch)
Y: Yellow (Not available for selector switch)
A: Orange (Not available for selector switch)
S: Blue (Not available for selector switch)

⑧ **Key type No.**
A, B, C, D, E or F
(“A” is standard)

⑨ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z8: With a contact protection cover
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards

Note: • The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

# AR22 and DR22
# Part number system

## Pilot lights

**DR22 D0L – E3 W □**
① ② ③ ④ ⑤

① **Product category**
DR22: 22mm dia. pilot light

② **Lens**
D0L: Dome
E3L: Extended round
K0L: Faceted
F3M: Flush square
F4M: Flush square (Transparent lens)
F5M: Flush square (12mm high frame)
E3M: Extended square
E3N: Flush rectangular
E3P: Extended round with square bezel

③ **Lamp voltage**
•Incandescent lamp

54: 5.5V AC/DC, without transformer
C4: 15V AC/DC, without transformer
D4: 20V AC/DC, without transformer
E4: 24V AC/DC, without transformer
H4: 100-110V AC, with transformer
L4: 115-127V AC, with transformer
M4: 200-220V AC, with transformer
Q4: 230-254V AC, with transformer
S4: 350-380V AC, with transformer
T4: 400-440V AC, with transformer
V4: 480V AC, with transformer
W4: 500-550V AC, with transformer

58: 5.5V AC/DC, short-body without transformer
C8: 15V AC/DC, short-body without transformer
D8: 20V AC/DC, short-body without transformer
E8: 24V AC/DC, short-body without transformer
H8: 100-110V AC, short-body with transformer
L8: 115-127V AC, short-body with transformer
M8: 200-220V AC, short-body with transformer

•LED lamp

A3: 6V AC, without transformer
63: 6V DC, without transformer
B3: 12V AC/DC, without transformer
C3: 15V AC/DC, without transformer
E3: 24V AC/DC, without transformer
H3: 100-110V AC, with transformer
L3: 115-127V AC, with transformer
M3: 200-220V AC, with transformer
Q3: 230-254V AC, with transformer
S3: 350-380V AC, with transformer
T3: 400-440V AC, with transformer
V3: 480V AC, with transformer
W3: 500-550V AC, with transformer
H7: 110V DC, with resistor unit

A9: 6V AC, short-body without transformer
69: 6V DC, short-body without transformer
B9: 12V AC/DC, short-body without transformer
C9: 15V AC/DC, short-body without transformer
E9: 24V AC/DC, short-body without transformer
H9: 100-110V AC, short-body with transformer
L9: 115-127V AC, short-body with transformer
M9: 200-220V AC, short-body with transformer

④ **Color of lens**
G: Green
R: Red
W: White
Y: Yellow
A: Orange
S: Blue

⑤ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards

Note: • The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

### Joy stick selector switches

**AR22A 0 N – A0A0 B**
① ②③ ④ ⑤

① **Product category**
AR22A: 22mm-dia. Joy stick selector switch

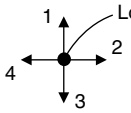
② **Handle**
0: Ball type (without lock, manual return)
1: Ball type with lock (manual return)
2: Rubber cap type (without lock, manual return)
5: Ball type (without lock, spring return)
6: Ball type with lock (spring return)
7: Rubber cap type (without lock, spring return)

③ **Terminal**
N: Screw
H: Solder/tab

④ **Contact arrangement**

| Contact arrangement | | Blank | 1NO | 1NC | 1NO+1NC | 2NO | 2NC | 2NO+2NC |
|---|---|---|---|---|---|---|---|---|
| Code | Screw | 0 | A | B | 1 | D | E | – |
| | Solder/tab | 0 | – | – | 1 | – | – | 2 |

Operating direction code of contacts




Locked position

1: Upper 2: Right
3: Lower 4: Left

Ex. AR22A0N-A 0 A 0 B
1 2 3 4

⑤ **Handle color**
B: Black

### ■ Ordering information

Specify the following:
1. Type number
   For the CCC approved product, add the suffix **(CCC)** to the type number

   Example: Pushbutton switch **AR22F0R-11B(CCC)**

### Buzzers

**DR22B 5 – E B**
① ② ③④

① **Product category**
DR22B: 22mm-dia. buzzer

② **Sound**
5: Electronic sound
3: Magnetic sound
8: Electronic sound (IP54)

③ **Operating voltage**
A: 6V AC (Type “5”, “8”)
6: 6V DC (Type “5”, “8”)
E: 12-24V AC/DC (Type “3” : 24V AC/DC)
F: 35-48V AC/DC (Type “5”, “8”)
H: 100-110V AC
M: 200-220V AC
1: 100-110V DC (Type “5”, “8”)

④ **Color of head**
B: Black

## ■ Standards approved

| | |
|---|---|
| UL508 | File No. E44592 |
| CSA C22.2 No.14 | File No. LR20479<br>cUL File No. E44592 (For AR22VG) |
| TÜV: EN60947-5-1 | Pushbutton, Illuminated pushbutton: R9551062,<br>Selector, Illuminated selector: R9551060<br>Pilot lights: R9551061<br>Joy stick selector switch: R2050803<br>(Lever switch)<br>Buzzer: J9950091 |
| TÜV: EN60947-5-1<br>EN60947-5-5 | Emergency stop pushbutton<br>Emergency stop illuminated pushbutton<br>: R50028146, R50028137 (For AR22VG) |

## ■ Specifications (Indoor use)

| Description | Pushbutton switch<br>Illuminated pushbutton switch<br>Emergency stop pushbutton switch<br>Emergency stop illuminated pushbutton switch<br>Selector switch<br>Illuminated selector switch | Joy stick selector<br>(Lever switch) | Pilot light |
|---|---|---|---|
| Rated insulation voltage | 600V AC/DC *1 | 250V AC/DC | 250V AC/DC *2 |
| Mechanical durability | *See page 13* | 250,000 operations | – |
| Electrical durability | 500,000 operations at 220V AC 6A<br>1 million operations at 220V AC 3A<br>(AR22VG type: 100,000 operations) | 100,000 operations<br>at 220V AC 1A<br>(Res. load) | – |
| Operating frequency | 1200 operations/hour (On-load factor: 40%)<br>AR22VG type: 1800 operations/hour (On-load factor: 40%) | | – |
| Dielectric strength | 2500V AC, 1 minute *3 | 2000V AC, 1 minute *4 | |
| Insulation resistance | 100MΩ or more (500V DC megger) | | |
| Rated impulse dielectric strength | 6kV (AR22VG type: 4kV) | – | 6kV |
| Conditional short-circuit current | 1000A | 1000A | – |
| Short-circuit protective device | Fuse 15A | Fuse 1A | – |
| Pollution degree | 3 | | |
| Vibration | Resonance: 10 to 55Hz, double amplitude 0.1mm *5<br>Constant: 16.7Hz, double amplitude 3mm | | |
| Shock | Malfunction durability: 100m/s² *6<br>Mechanical durability: 500m/s² | | Mechanical durability: 500m/s² |
| Ambient temperature<br>(No condensation or no icing) | -20 to +70°C *7 | -5 to +70°C | -20 to +50°C |
| Storage temperature | -40 to +80°C | | |
| Humidity | 45 to 85% RH (within -5 to +40°C) | | |
| Degree of protection | IP65 | | |

Notes: *1 Illuminated type without transformer and AR22VG type: 250V AC/DC
*2 Pilot light with transformer: 600V AC
*3 Illuminated type without transformer: 2000V AC, 1 minute (except AR22VGF type)
*4 Pilot light with transformer: 2500V AC, 1 minute
*5 Emergency stop type: 10 to 500Hz, double amplitude 0.7mm (acceleration 50m/s²), according to the test condition of EN60947-5-5 (1998)
*6 Emergency stop type: 150m/s²
*7 AR22VGE type: -20 to +60°C, illuminated type: -20 to +50°C

### ● Mechanical durability

| Description | | Operations |
|---|---|---|
| Pushbutton switch<br>Illuminated pushbutton switch<br>Emergency stop pushbutton switch<br>Emergency stop illuminated pushbutton | Momentary action<br>Alternate action<br>With selector ring<br>Push-lock, turn-reset<br>Push-lock, pull-reset | 5 million<br>1 million<br>100,000<br>100,000<br>30,000 |
| Selector switch | Maintained 1, 2, 3, 4-contact<br>Maintained 5, 6-contact<br>Control type, spring return, spring/manual return | 1 million<br>500,000<br>200,000 |
| Illuminated selector switch | Maintained<br>Without transformer 1, 2, 3-contact<br>4-contact<br>With transformer 1, 2-contact<br>3-contact<br><br>Spring return, spring/manual return | <br>1 million<br>500,000<br>1 million<br>500,000<br><br>200,000 |

Note: Key insertion/removal durability for selector switch key types
- Key type 10,000
- Key (Long durability) type 20,000

### ● Buzzers

| Item | DR22B5 | DR22B3 | DR22B8 |
|---|---|---|---|
| Rated insulation voltage | Without transformer: 60V AC/DC With transformer: 250V AC | | |
| Sound level | 90dB (0.1m)<br>70dB (1m) | 80 to 90dB (0.1m)<br>60 to 70dB (1m) | 80dB (0.1m)<br>60dB (1.0m) |
| Durability | 1000h | 200h | 1000h |
| Frequency | 2.4 to 3.3kHz | | |
| Intermittent cycle | Approx. 170-cycle/min | | |
| Current consumption | See the table below | | |
| Dielectric strength | Without transformer: 1000V AC 1 minute With transformer: 2000V AC 1 minute | | |
| Insulation resistance | 100MΩ or more (500V DC megger) | | |
| Pollution degree | 3 | | |
| Vibration | Resonance: 10 to 55Hz, double amplitude 0.1mm<br>Constant: 16.7Hz, double amplitude 3.0mm | | |
| Shock | Mechanical durability: 500m/s$^2$ | | |
| Ambient temperature | –20 to +60˚C (No condensation or no icing)<br>(with resistor unit: –20 to +40˚C) | | |
| Storage temperature | –30 to +70˚C | | |
| Humidity | 45 to 85%RH (within –5 to 40˚C) | | |
| Degree of protection | IP00 | | IP54 |

### •Current consumption

| Operational voltage | Current consumption<br>DR22B5, DR22B8 | <br>DR22B3 |
|---|---|---|
| 6V AC | 70mA AC | – |
| 6V DC | 35mA DC | – |
| 24V AC/DC | 40mA AC, 25mA DC | 30mA AC, 20mA DC |
| 48V AC/DC | 65mA AC, 20mA DC | – |
| 110V AC | 30mA AC | 30mA AC |
| 110V DC | 30mA DC | – |
| 220V AC | 15mA AC | 15mA AC |

## ■ Contact ratings

### ● UL/CSA standards

**AC** (COS ø=0.35)

| Contact rated code | 120V | | 240V | | 480V | | 600V | |
|---|---|---|---|---|---|---|---|---|
| | Making current | Breaking current | Making current | Breaking current | Making current | Breaking current | Making current | Breaking current |
| A600 | 60A | 6.0A | 30A | 3.0A | 15A | 1.5A | 12A | 1.2A |
| B300 (AR22VG) | 30A | 3.0A | 15A | 1.5A | – | – | – | – |

**DC** $T_{0.95}$= 6P (Max. 300ms)

| Description | Contact rated code | Making current · Breaking current | | |
|---|---|---|---|---|
| | | 125V | 250V | 301V–600V |
| Illuminated pushbutton switch<br>Pushbutton<br>(Ring type selector switch: AR22S2R only)<br>Emergency stop pushbutton switch<br>Emergency stop illuminated pushbutton switch<br>(Except the overlap contact types) | P600 | 1.1A | 0.55A | 0.2A |
| | Q300<br>(AR22VG) | 0.55A | 0.27A | – |
| Overlap contact types of products shown above<br>Pushbutton<br>(Ring type selector switch: AR22S1R, S6R only)<br>Selector switch (2-position only, except the overlap contact types)<br>Illuminated selector switch<br>(2-position only, except the overlap contact types) | Q600 | 0.55A | 0.27A | 0.1A |
| Pushbutton<br>(Ring type selector switch: AR22S3R only)<br>Selector switch (2-pos./overlap contact type, 3-, 4-, 5-pos. type)<br>Illuminated selector switch (2-pos./overlap contact type, 3-pos. type) | R300 | 0.22A | 0.11A | – |

Note: Joy stick selector switches (Lever switches): 250V AC, 5A (Res. load) 125V DC, 0.2A 24V DC, 1A (Res. load)

### ● EN standard/TÜV approved

| Description | Rated operational current | | | |
|---|---|---|---|---|
| | Rated thermal current | Rated operational voltage | AC15 (Ind. load) | DC13 (Ind. load) |
| | | | Rated operational current | Rated operational current |
| Illuminated pushbutton switch | 10A | 24V | 6.0A | 4.0A (AR22VG: 1.5A) |
| Pushbutton (Except the selector ring type) | | 120V | 6.0A (AR22VG: 3A) | – |
| Emergency stop pushbutton switch | | 125V | – | 1.3A (AR22VG: 0.3A) |
| Emergency stop illuminated pushbutton switch | | 240V | 6.0A (AR22VG: 3A) | – |
| Selector switch (2-position) | | 250V | – | 0.45A(AR22VG: 0.15A) |
| Illuminated selector switch (2-position) | | 480V | 2.5A (AR22VG: –) | – |
| | | 600V | 2.0A (AR22VG: –) | – |
| Selector switch (3, 4, 5-position) | 10A | 24V | 6.0A | 2.0A |
| Illuminated selector switch (3-position) | | 120V | 6.0A | – |
| Pushbutton with selector ring | | 125V | – | 0.65A |
| | | 240V | 6.0A | – |
| | | 250V | – | 0.23A |
| | | 480V | 2.5A | – |
| | | 600V | 2.0A | – |
| Joy stick selector switch (Lever switch) | 5A | 24V | – | 0.7A |
| | | 120V | 0.3A | – |
| | | 125V | – | 0.15A |
| | | 240V | 0.3A | – |

Lamp rated voltage UL/CSA standards, TÜV approved

| | LED lamp | Incandescent lamp | Neon lamp |
|---|---|---|---|
| Full-voltage (without transformer) | Max. 24V AC/DC | Max. 30V AC/DC | Max. 240V AC |
| With transformer | Max. 550V AC (Short-body type: Max. 220V AC) | | – |

### ■ Operating characteristic (1NO+1NC)

| Description | Pushbutton<br>Illuminated pushbutton | Emergency stop pushbutton<br>Emergency stop illuminated pushbutton | | Selector *2<br>Illuminated selector | | |
|---|---|---|---|---|---|---|
| | | Push-lock type | Push-pull type | Maintained | Spring/manual return | Spring return |
| Ave. required operating force | 9N (Push-lock type: 20N) | 30N (AR22VG: 22N)*1 | 45N | 0.15N•m | 0.13N•m | 0.1N•m |
| Operating travel | Approx. 6mm<br>(Push-lock type: Approx. 9mm, operation angle: Approx. 45°) | Approx. 9mm<br>(AR22VG: Approx. 10mm, operation angle: Approx. 45°) | Approx. 9mm | 2-position: Approx. 90°<br>3-position: Approx. 45°<br>4-position: Approx. 40°<br>5-position: Approx. 30° | 3-position: Approx. 45° | 2-position: Approx. 60°<br>3-position: Approx. 45° |
| Required return force | –<br>(Push-lock type: 0.6N•m) | 0.6N•m<br>(AR22VG: 0.2N•m) | 30N (pull) | 0.15N•m | 0.13N•m | – |

Notes: *1 AR22V2R, V4R, V7R, VAL types: 45N
*2 4-position, 5-position: 2NO+2NC

### ■ Lamp ratings

**•Illuminated pushbuttons, illuminated selectors, pilot lights**

| Transformer | Lamp voltage | LED | | | Incandescent | | |
|---|---|---|---|---|---|---|---|
| | | Type | Rated voltage | Consumption | Type | Rated voltage | Consumption |
| Without transformer | 5.5V AC/DC | – | – | – | AHX135 | 6.3V AC/DC | 0.9W |
| | 6V AC | APX510-6□ | 6V AC | Green, red, orange, amber: 7mA AC<br>Yellow: 26mA AC Blue: 16mA AC | – | – | – |
| | 6V DC | APX510-D6□ | 6V DC | Green, red, orange, amber: 11mA DC<br>Yellow: 33mA DC Blue: 22mA DC | – | – | – |
| | 12V AC/DC | APX510-12□ | 12V AC/DC | 14mA AC, 11mA DC | – | – | – |
| | 15V AC/DC | APX510-15□ | 15V AC/DC | 13mA AC, 11mA DC | AHX279 | 18V AC/DC | 0.8W |
| | 20V AC/DC | – | – | – | AHX144 | 24V AC/DC | 0.9W |
| | 24V AC/DC | APX510-24□ | 24V AC/DC | 12mA AC, 11mA DC | AHX129 | 30V AC/DC | 0.8W |
| With transformer (Standard type: AR9T511) | 110V AC | APX510-6□ | 6V AC | 1.5VA | AHX135 | 6.3V AC/DC | 2VA |
| | 127V AC | | | | | | 2VA |
| | 220V AC | | | | | | 2VA |
| | 254V AC | APX510-6□ | 6V AC | 2.5VA | AHX135 | 6.3V AC/DC | 2.5VA |
| | 380V AC | | | | | | 2.5VA |
| | 440V AC | | | | | | 2.5VA |
| | 480V AC | | | | | | 2.5VA |
| | 550V AC | | | | | | 2.5VA |
| With resistor unit (AR9T519-H) | 110V DC | APX510-24□ | 24V AC/DC | 1.2W | – | – | – |

Notes: • Short body pilot lights: 110V AC, 127V AC, 220V AC only
• Replace the □ mark by the lamp luminous color code, *see page 16*
• Except AR22VGF type

**•Emergency stop illuminated pushbuttons (AR22VGF type)**

| Transformer | Lamp | Voltage | Type | Rated voltage | Consumption |
|---|---|---|---|---|---|
| Without transformer | LED | 24V AC/DC | AR9L002-ER | 24V AC/DC | 12mA AC<br>11mA DC |
| | Neon | 110V AC | AR9N001-HA | 110V AC | 0.19VA |
| | | 120V AC | AR9N001-KA | 120V AC | 0.21VA |
| | | 220V AC | AR9N001-MA | 220V AC | 0.30VA |
| | | 240V AC | AR9N001-PA | 240V AC | 0.30VA |

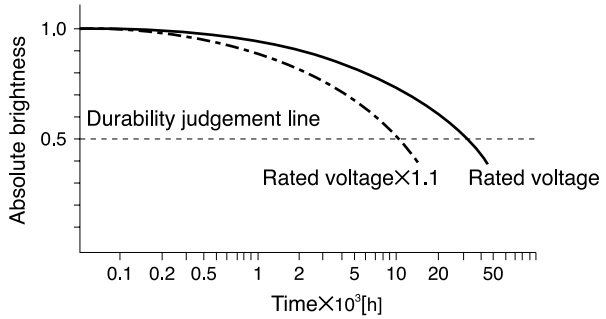
Notes: Lamp base: BA9S/13

## ■ Lamp durability

| Lamp | Durability | Judgement criterion |
|---|---|---|
| LED | Approx. 30000h | When brightness is less than 50% of initial value |
| Incandescent | Approx. 5000h (AC) | When the bulb burns out |
| Neon | Approx. 5000h | When a remarkable blackening appears in the glass bulb and the using becomes improper |

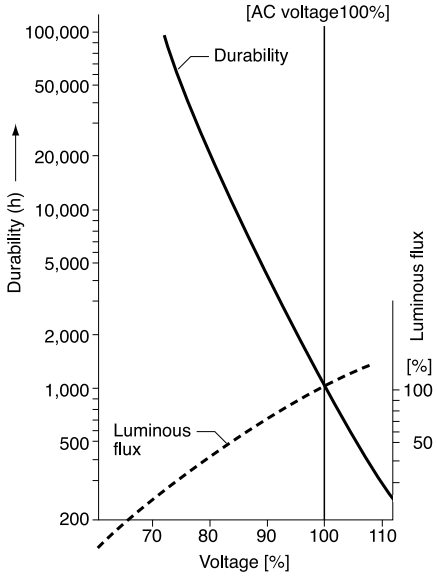
Note: The operating voltage for incandescent lamps is set at 80 to 90% of the lamp's rated voltage.

### Estimated durability for LED lamps




Notes: • Durability at Ta=25˚C
• Durability is affected by temperature, humidity, and voltage fluctuation.

### Incandescent lamp voltage characteristics




## ■ Combination of lens color and LED or neon lamp luminous color

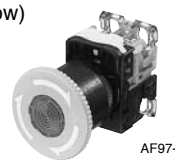
| Lens Color | Code | LED or neon lamp Luminous color | Type |
|---|---|---|---|
| Green | G | Green | APX510-■G |
| Red | R | Red | APX510-■R |
| White | W | Orange | APX510-■O |
| Yellow | Y | Yellow | APX510-■Y |
| Orange * | A | Amber | APX510-■A |
| Blue | S | Blue | APX510-■S |
| Red (AR22VGF) | R | Red | AR9L002-ER |
| | | Orange (Neon lamp) | AR9N001-■A |

Notes: * DR22F4M: LED lamp color is orange. (APX510-■O)
• Replace the ■ mark by the lamp voltage code

### ■ Illuminated pushbutton switches

| Operator | Trans-former | Contact | LED lamp Momentary action Type | LED lamp Alternate action Type | Incandescent lamp Momentary action Type | Incandescent lamp Alternate action Type |
|---|---|---|---|---|---|---|
| Flush round head AF94-318 | Without | 1NO | **AR22F0L-10■3□** | **AR22F5L-10■3□** | **AR22F0L-10■4□** | **AR22F5L-10■4□** |
| | | 1NC | **AR22F0L-01■3□** | **AR22F5L-01■3□** | **AR22F0L-01■4□** | **AR22F5L-01■4□** |
| | | 1NO+1NC | **AR22F0L-11■3□** | **AR22F5L-11■3□** | **AR22F0L-11■4□** | **AR22F5L-11■4□** |
| | | 2NO+2NC | **AR22F0L-22■3□** | — | **AR22F0L-22■4□** | — |
| | With | 1NO | **AR22F0L-10■3□** | **AR22F5L-10■3□** | **AR22F0L-10■4□** | **AR22F5L-10■4□** |
| | | 1NC | **AR22F0L-01■3□** | **AR22F5L-01■3□** | **AR22F0L-01■4□** | **AR22F5L-01■4□** |
| | | 1NO+1NC | **AR22F0L-11■3□** | **AR22F5L-11■3□** | **AR22F0L-11■4□** | **AR22F5L-11■4□** |
| Extended round head AF94-317 | Without | 1NO | **AR22E0L-10■3□** | **AR22E5L-10■3□** | **AR22E0L-10■4□** | **AR22E5L-10■4□** |
| | | 1NC | **AR22E0L-01■3□** | **AR22E5L-01■3□** | **AR22E0L-01■4□** | **AR22E5L-01■4□** |
| | | 1NO+1NC | **AR22E0L-11■3□** | **AR22E5L-11■3□** | **AR22E0L-11■4□** | **AR22E5L-11■4□** |
| | | 2NO+2NC | **AR22E0L-22■3□** | — | **AR22E0L-22■4□** | — |
| | With | 1NO | **AR22E0L-10■3□** | **AR22E5L-10■3□** | **AR22E0L-10■4□** | **AR22E5L-10■4□** |
| | | 1NC | **AR22E0L-01■3□** | **AR22E5L-01■3□** | **AR22E0L-01■4□** | **AR22E5L-01■4□** |
| | | 1NO+1NC | **AR22E0L-11■3□** | **AR22E5L-11■3□** | **AR22E0L-11■4□** | **AR22E5L-11■4□** |
| Mushroom head (40mm dia.) AF94-367 | Without | 1NO | **AR22M0L-10■3□** | **AR22M5L-10■3□** | **AR22M0L-10■4□** | **AR22M5L-10■4□** |
| | | 1NC | **AR22M0L-01■3□** | **AR22M5L-01■3□** | **AR22M0L-01■4□** | **AR22M5L-01■4□** |
| | | 1NO+1NC | **AR22M0L-11■3□** | **AR22M5L-11■3□** | **AR22M0L-11■4□** | **AR22M5L-11■4□** |
| | | 2NO+2NC | **AR22M0L-22■3□** | — | **AR22M0L-22■4□** | — |
| | With | 1NO | **AR22M0L-10■3□** | **AR22M5L-10■3□** | **AR22M0L-10■4□** | **AR22M5L-10■4□** |
| | | 1NC | **AR22M0L-01■3□** | **AR22M5L-01■3□** | **AR22M0L-01■4□** | **AR22M5L-01■4□** |
| | | 1NO+1NC | **AR22M0L-11■3□** | **AR22M5L-11■3□** | **AR22M0L-11■4□** | **AR22M5L-11■4□** |
| Mushroom head (29mm dia.) AF94-369 | Without | 1NO | **AR22M4L-10■3□** | **AR22M9L-10■3□** | **AR22M4L-10■4□** | **AR22M9L-10■4□** |
| | | 1NC | **AR22M4L-01■3□** | **AR22M9L-01■3□** | **AR22M4L-01■4□** | **AR22M9L-01■4□** |
| | | 1NO+1NC | **AR22M4L-11■3□** | **AR22M9L-11■3□** | **AR22M4L-11■4□** | **AR22M9L-11■4□** |
| | | 2NO+2NC | **AR22M4L-22■3□** | — | **AR22M4L-22■4□** | — |
| | With | 1NO | **AR22M4L-10■3□** | **AR22M9L-10■3□** | **AR22M4L-10■4□** | **AR22M9L-10■4□** |
| | | 1NC | **AR22M4L-01■3□** | **AR22M9L-01■3□** | **AR22M4L-01■4□** | **AR22M9L-01■4□** |
| | | 1NO+1NC | **AR22M4L-11■3□** | **AR22M9L-11■3□** | **AR22M4L-11■4□** | **AR22M9L-11■4□** |
| Extended with transparent full guard (24mm dia.) AF94-294 | Without | 1NO | **AR22G4L-10■3□** | **AR22G9L-10■3□** | **AR22G4L-10■4□** | **AR22G9L-10■4□** |
| | | 1NC | **AR22G4L-01■3□** | **AR22G9L-01■3□** | **AR22G4L-01■4□** | **AR22G9L-01■4□** |
| | | 1NO+1NC | **AR22G4L-11■3□** | **AR22G9L-11■3□** | **AR22G4L-11■4□** | **AR22G9L-11■4□** |
| | | 2NO+2NC | **AR22G4L-22■3□** | — | **AR22G4L-22■4□** | — |
| | With | 1NO | **AR22G4L-10■3□** | **AR22G9L-10■3□** | **AR22G4L-10■4□** | **AR22G9L-10■4□** |
| | | 1NC | **AR22G4L-01■3□** | **AR22G9L-01■3□** | **AR22G4L-01■4□** | **AR22G9L-01■4□** |
| | | 1NO+1NC | **AR22G4L-11■3□** | **AR22G9L-11■3□** | **AR22G4L-11■4□** | **AR22G9L-11■4□** |
| Extended with full guard (24mm dia. with openings) AF99-319 | Without | 1NO | **AR22G2L-10■3□** | **AR22G7L-10■3□** | **AR22G2L-10■4□** | **AR22G7L-10■4□** |
| | | 1NC | **AR22G2L-01■3□** | **AR22G7L-01■3□** | **AR22G2L-01■4□** | **AR22G7L-01■4□** |
| | | 1NO+1NC | **AR22G2L-11■3□** | **AR22G7L-11■3□** | **AR22G2L-11■4□** | **AR22G7L-11■4□** |
| | | 2NO+2NC | **AR22G2L-22■3□** | — | **AR22G2L-22■4□** | — |
| | With | 1NO | **AR22G2L-10■3□** | **AR22G7L-10■3□** | **AR22G2L-10■4□** | **AR22G7L-10■4□** |
| | | 1NC | **AR22G2L-01■3□** | **AR22G7L-01■3□** | **AR22G2L-01■4□** | **AR22G7L-01■4□** |
| | | 1NO+1NC | **AR22G2L-11■3□** | **AR22G7L-11■3□** | **AR22G2L-11■4□** | **AR22G7L-11■4□** |

Note: ■ □ *See page 19*

| Operator | Trans-former | Contact | LED lamp Momentary action Type | LED lamp Alternate action Type | Incandescent lamp Momentary action Type | Incandescent lamp Alternate action Type |
|---|---|---|---|---|---|---|
| Extended with full guard (24mm dia.) KK02-127A | Without | 1NO | **AR22G1L-10■3□** | **AR22G6L-10■3□** | **AR22G1L-10■4□** | **AR22G6L-10■4□** |
| | | 1NC | **AR22G1L-01■3□** | **AR22G6L-01■3□** | **AR22G1L-01■4□** | **AR22G6L-01■4□** |
| | | 1NO+1NC | **AR22G1L-11■3□** | **AR22G6L-11■3□** | **AR22G1L-11■4□** | **AR22G6L-11■4□** |
| | | 2NO+2NC | **AR22G1L-22■3□** | — | **AR22G1L-22■4□** | — |
| | With | 1NO | **AR22G1L-10■3□** | **AR22G6L-10■3□** | **AR22G1L-10■4□** | **AR22G6L-10■4□** |
| | | 1NC | **AR22G1L-01■3□** | **AR22G6L-01■3□** | **AR22G1L-01■4□** | **AR22G6L-01■4□** |
| | | 1NO+1NC | **AR22G1L-11■3□** | **AR22G6L-11■3□** | **AR22G1L-11■4□** | **AR22G6L-11■4□** |
| Push-lock, turn-reset (40mm dia. with white arrow)  AF97-72 | Without | 1NO | — | **AR22V5L-10■3□** | — | **AR22V5L-10■4□** |
| | | 1NC | — | **AR22V5L-01■3□** | — | **AR22V5L-01■4□** |
| | | 1NO+1NC | — | **AR22V5L-11■3□** | — | **AR22V5L-11■4□** |
| | | 3NC | — | **AR22V5L-03■3□** | — | **AR22V5L-03■4□** |
| | With | 1NO | — | **AR22V5L-10■3□** | — | **AR22V5L-10■4□** |
| | | 1NC | — | **AR22V5L-01■3□** | — | **AR22V5L-01■4□** |
| | | 1NO+1NC | — | **AR22V5L-11■3□** | — | **AR22V5L-11■4□** |
| Flush square head AF97-68 | Without | 1NO | **AR22F0M-10■3□** | **AR22F5M-10■3□** | **AR22F0M-10■4□** | **AR22F5M-10■4□** |
| | | 1NC | **AR22F0M-01■3□** | **AR22F5M-01■3□** | **AR22F0M-01■4□** | **AR22F5M-01■4□** |
| | | 1NO+1NC | **AR22F0M-11■3□** | **AR22F5M-11■3□** | **AR22F0M-11■4□** | **AR22F5M-11■4□** |
| | | 2NO+2NC | **AR22F0M-22■3□** | — | **AR22F0M-22■4□** | — |
| | With | 1NO | **AR22F0M-10■3□** | **AR22F5M-10■3□** | **AR22F0M-10■4□** | **AR22F5M-10■4□** |
| | | 1NC | **AR22F0M-01■3□** | **AR22F5M-01■3□** | **AR22F0M-01■4□** | **AR22F5M-01■4□** |
| | | 1NO+1NC | **AR22F0M-11■3□** | **AR22F5M-11■3□** | **AR22F0M-11■4□** | **AR22F5M-11■4□** |
| Extended square head AF94-357 | Without | 1NO | **AR22E0M-10■3□** | **AR22E5M-10■3□** | **AR22E0M-10■4□** | **AR22E5M-10■4□** |
| | | 1NC | **AR22E0M-01■3□** | **AR22E5M-01■3□** | **AR22E0M-01■4□** | **AR22E5M-01■4□** |
| | | 1NO+1NC | **AR22E0M-11■3□** | **AR22E5M-11■3□** | **AR22E0M-11■4□** | **AR22E5M-11■4□** |
| | | 2NO+2NC | **AR22E0M-22■3□** | — | **AR22E0M-22■4□** | — |
| | With | 1NO | **AR22E0M-10■3□** | **AR22E5M-10■3□** | **AR22E0M-10■4□** | **AR22E5M-10■4□** |
| | | 1NC | **AR22E0M-01■3□** | **AR22E5M-01■3□** | **AR22E0M-01■4□** | **AR22E5M-01■4□** |
| | | 1NO+1NC | **AR22E0M-11■3□** | **AR22E5M-11■3□** | **AR22E0M-11■4□** | **AR22E5M-11■4□** |
| Flush round head with square bezel AF94-315 | Without | 1NO | **AR22F0P-10■3□** | **AR22F5P-10■3□** | **AR22F0P-10■4□** | **AR22F5P-10■4□** |
| | | 1NC | **AR22F0P-01■3□** | **AR22F5P-01■3□** | **AR22F0P-01■4□** | **AR22F5P-01■4□** |
| | | 1NO+1NC | **AR22F0P-11■3□** | **AR22F5P-11■3□** | **AR22F0P-11■4□** | **AR22F5P-11■4□** |
| | | 2NO+2NC | **AR22F0P-22■3□** | — | **AR22F0P-22■4□** | — |
| | With | 1NO | **AR22F0P-10■3□** | **AR22F5P-10■3□** | **AR22F0P-10■4□** | **AR22F5P-10■4□** |
| | | 1NC | **AR22F0P-01■3□** | **AR22F5P-01■3□** | **AR22F0P-01■4□** | **AR22F5P-01■4□** |
| | | 1NO+1NC | **AR22F0P-11■3□** | **AR22F5P-11■3□** | **AR22F0P-11■4□** | **AR22F5P-11■4□** |
| Extended round head with square bezel AF94-314 | Without | 1NO | **AR22E0P-10■3□** | **AR22E5P-10■3□** | **AR22E0P-10■4□** | **AR22E5P-10■4□** |
| | | 1NC | **AR22E0P-01■3□** | **AR22E5P-01■3□** | **AR22E0P-01■4□** | **AR22E5P-01■4□** |
| | | 1NO+1NC | **AR22E0P-11■3□** | **AR22E5P-11■3□** | **AR22E0P-11■4□** | **AR22E5P-11■4□** |
| | | 2NO+2NC | **AR22E0P-22■3□** | — | **AR22E0P-22■4□** | — |
| | With | 1NO | **AR22E0P-10■3□** | **AR22E5P-10■3□** | **AR22E0P-10■4□** | **AR22E5P-10■4□** |
| | | 1NC | **AR22E0P-01■3□** | **AR22E5P-01■3□** | **AR22E0P-01■4□** | **AR22E5P-01■4□** |
| | | 1NO+1NC | **AR22E0P-11■3□** | **AR22E5P-11■3□** | **AR22E0P-11■4□** | **AR22E5P-11■4□** |

Note: ■ □ *See page 19*

| Operator | Trans-former | Contact | LED lamp Momentary action Type | LED lamp Alternate action Type | Incandescent lamp Momentary action Type | Incandescent lamp Alternate action Type |
|---|---|---|---|---|---|---|
| Mushroom head with square bezel (29mm dia.) AF94-440 | Without | 1NO | **AR22M4P-10■3□** | — | **AR22M4P-10■4□** | — |
| | | 1NC | **AR22M4P-01■3□** | — | **AR22M4P-01■4□** | — |
| | | 1NO+1NC | **AR22M4P-11■3□** | — | **AR22M4P-11■4□** | — |
| | | 2NO+2NC | **AR22M4P-22■3□** | — | **AR22M4P-22■4□** | — |
| | With | 1NO | **AR22M4P-10■3□** | — | **AR22M4P-10■4□** | — |
| | | 1NC | **AR22M4P-01■3□** | — | **AR22M4P-01■4□** | — |
| | | 1NO+1NC | **AR22M4P-11■3□** | — | **AR22M4P-11■4□** | — |

**•Lens color**

Replace the□ mark by the lens color code

| Color | Green | Red | White | Blue | Yellow | Orange |
|---|---|---|---|---|---|---|
| Code | G | R | W | S | Y | A |

Note: AR22V5L type: Red, yellow only

**•Contact arrangements**

Contact arrangements other than above are available

| Contact arrangement | 1NO | 1NC | 1NO+1NC | 2NO | 2NC | 3NO |
|---|---|---|---|---|---|---|
| Code | 10 | 01 | 11 | 20 | 02 | 30 |

| Contact arrangement | 3NC | 2NO+2NC | 4NO | 4NC | 5NO | 5NC |
|---|---|---|---|---|---|---|
| Code | 03 | 22 | 40 | 04 | 50 | 05 |

Available numbers of contact blocks

| Operation | Without transformer | With transformer |
|---|---|---|
| Momentary action | 5-contact block | 3-contact block |
| Alternate action Push-lock, turn-reset | 3-contact block | 2-contact block |

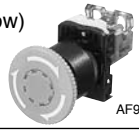
**•Voltage**

Replace the ■ mark by the lamp voltage code

| Transformer | | Code LED | Code Incandescent |
|---|---|---|---|
| Without transformer | 6V DC | 6 | — |
| | 6V AC | A | — |
| | 5.5V AC/DC | — | 5 |
| | 12V AC/DC | B | — |
| | 15V AC/DC | C | C |
| | 20V AC/DC | — | D |
| | 24V AC/DC | E | E |
| With transformer | 100-110V AC | H | H |
| | 115-127V AC | L | L |
| | 200-220V AC | M | M |
| | 230-254V AC | Q | Q |
| | 350-380V AC | S | S |
| | 400-440V AC | T | T |
| | 480V AC | V | V |
| | 500-550V AC | W | W |

## ■ Pushbutton switches

| Operator | Contact | Momentary action Type | Alternate action Type |
|---|---|---|---|
| Flush round head AF94-320 | 1NO | **AR22F0R-10□** | **AR22F5R-10□** |
| | 1NC | **AR22F0R-01□** | **AR22F5R-01□** |
| | 1NO+1NC | **AR22F0R-11□** | **AR22F5R-11□** |
| | 2NO | **AR22F0R-20□** | **AR22F5R-20□** |
| | 2NC | **AR22F0R-02□** | **AR22F5R-02□** |
| | 2NO+2NC | **AR22F0R-22□** | **AR22F5R-22□** |
| Extended round head AF94-319 | 1NO | **AR22E0R-10□** | **AR22E5R-10□** |
| | 1NC | **AR22E0R-01□** | **AR22E5R-01□** |
| | 1NO+1NC | **AR22E0R-11□** | **AR22E5R-11□** |
| | 2NO | **AR22E0R-20□** | **AR22E5R-20□** |
| | 2NC | **AR22E0R-02□** | **AR22E5R-02□** |
| | 2NO+2NC | **AR22E0R-22□** | **AR22E5R-22□** |
| Flush round head symbol mark type AF98-193 | 1NO | **AR22FAR-10C■** | **AR22FBR-10C■** |
| | 1NC | **AR22FAR-01C■** | **AR22FBR-01C■** |
| | 1NO+1NC | **AR22FAR-11C■** | **AR22FBR-11C■** |
| | 2NO | **AR22FAR-20C■** | **AR22FBR-20C■** |
| | 2NC | **AR22FAR-02C■** | **AR22FBR-02C■** |
| | 2NO+2NC | **AR22FAR-22C■** | **AR22FBR-22C■** |
| Extended round head symbol mark type AF98-192 | 1NO | **AR22EAR-10C■** | **AR22EBR-10C■** |
| | 1NC | **AR22EAR-01C■** | **AR22EBR-01C■** |
| | 1NO+1NC | **AR22EAR-11C■** | **AR22EBR-11C■** |
| | 2NO | **AR22EAR-20C■** | **AR22EBR-20C■** |
| | 2NC | **AR22EAR-02C■** | **AR22EBR-02C■** |
| | 2NO+2NC | **AR22EAR-22C■** | **AR22EBR-22C■** |
| Mushroom head (40mm dia.) AF94-293 | 1NO | **AR22M0R-10□** | **AR22M5R-10□** |
| | 1NC | **AR22M0R-01□** | **AR22M5R-01□** |
| | 1NO+1NC | **AR22M0R-11□** | **AR22M5R-11□** |
| | 2NO | **AR22M0R-20□** | **AR22M5R-20□** |
| | 2NC | **AR22M0R-02□** | **AR22M5R-02□** |
| | 2NO+2NC | **AR22M0R-22□** | **AR22M5R-22□** |
| Mushroom head (29mm dia.) AF94-321 | 1NO | **AR22M4R-10□** | **AR22M9R-10□** |
| | 1NC | **AR22M4R-01□** | **AR22M9R-01□** |
| | 1NO+1NC | **AR22M4R-11□** | **AR22M9R-11□** |
| | 2NO | **AR22M4R-20□** | **AR22M9R-20□** |
| | 2NC | **AR22M4R-02□** | **AR22M9R-02□** |
| | 2NO+2NC | **AR22M4R-22□** | **AR22M9R-22□** |
| Extended with full guard (24mm dia.) AF94-292 | 1NO | **AR22G3R-10□** | **AR22G8R-10□** |
| | 1NC | **AR22G3R-01□** | **AR22G8R-01□** |
| | 1NO+1NC | **AR22G3R-11□** | **AR22G8R-11□** |
| | 2NO | **AR22G3R-20□** | **AR22G8R-20□** |
| | 2NC | **AR22G3R-02□** | **AR22G8R-02□** |
| | 2NO+2NC | **AR22G3R-22□** | **AR22G8R-22□** |

| Operator | Contact | Momentary action Type | Alternate action Type |
|---|---|---|---|
| Flush with full guard (24mm dia.) AF02-68 | 1NO | **AR22G2R-10□** | **AR22G7R-10□** |
| | 1NC | **AR22G2R-01□** | **AR22G7R-01□** |
| | 1NO+1NC | **AR22G2R-11□** | **AR22G7R-11□** |
| | 2NO | **AR22G2R-20□** | **AR22G7R-20□** |
| | 2NC | **AR22G2R-02□** | **AR22G7R-02□** |
| | 2NO+2NC | **AR22G2R-22□** | **AR22G7R-22□** |
| Mushroom head with full guard (40mm dia.) AF94-372 | 1NO | **AR22M3R-10□** | **AR22M8R-10□** |
| | 1NC | **AR22M3R-01□** | **AR22M8R-01□** |
| | 1NO+1NC | **AR22M3R-11□** | **AR22M8R-11□** |
| | 2NO | **AR22M3R-20□** | **AR22M8R-20□** |
| | 2NC | **AR22M3R-02□** | **AR22M8R-02□** |
| | 2NO+2NC | **AR22M3R-22□** | **AR22M8R-22□** |
| Extended with half guard AF96-236 | 1NO | **AR22G0R-10□** | **AR22G5R-10□** |
| | 1NC | **AR22G0R-01□** | **AR22G5R-01□** |
| | 1NO+1NC | **AR22G0R-11□** | **AR22G5R-11□** |
| | 2NO | **AR22G0R-20□** | **AR22G5R-20□** |
| | 2NC | **AR22G0R-02□** | **AR22G5R-02□** |
| | 2NO+2NC | **AR22G0R-22□** | **AR22G5R-22□** |
| Push-lock, turn-reset (40mm dia. with white arrow)  AF97-70 | 1NO | — | **AR22V5R-10□** |
| | 1NC | — | **AR22V5R-01□** |
| | 1NO+1NC | — | **AR22V5R-11□** |
| | 2NO | — | **AR22V5R-20□** |
| | 2NC | — | **AR22V5R-02□** |
| | 2NO+2NC | — | **AR22V5R-22□** |
| Flush square head AF94-316 | 1NO | **AR22F0S-10□** | **AR22F5S-10□** |
| | 1NC | **AR22F0S-01□** | **AR22F5S-01□** |
| | 1NO+1NC | **AR22F0S-11□** | **AR22F5S-11□** |
| | 2NO | **AR22F0S-20□** | **AR22F5S-20□** |
| | 2NC | **AR22F0S-02□** | **AR22F5S-02□** |
| | 2NO+2NC | **AR22F0S-22□** | **AR22F5S-22□** |
| Extended square head AF94-296 | 1NO | **AR22E0S-10□** | **AR22E5S-10□** |
| | 1NC | **AR22E0S-01□** | **AR22E5S-01□** |
| | 1NO+1NC | **AR22E0S-11□** | **AR22E5S-11□** |
| | 2NO | **AR22E0S-20□** | **AR22E5S-20□** |
| | 2NC | **AR22E0S-02□** | **AR22E5S-02□** |
| | 2NO+2NC | **AR22E0S-22□** | **AR22E5S-22□** |
| Flush round head with square bezel AF94-295 | 1NO | **AR22F0Y-10□** | **AR22F5Y-10□** |
| | 1NC | **AR22F0Y-01□** | **AR22F5Y-01□** |
| | 1NO+1NC | **AR22F0Y-11□** | **AR22F5Y-11□** |
| | 2NO | **AR22F0Y-20□** | **AR22F5Y-20□** |
| | 2NC | **AR22F0Y-02□** | **AR22F5Y-02□** |
| | 2NO+2NC | **AR22F0Y-22□** | **AR22F5Y-22□** |

Note: ■ □ *See page 21*

| Operator | Contact | Momentary action Type | Alternate action Type |
|---|---|---|---|
| Extended round head with square bezel AF94-297 | 1NO | **AR22E0Y-10□** | **AR22E5Y-10□** |
| | 1NC | **AR22E0Y-01□** | **AR22E5Y-01□** |
| | 1NO+1NC | **AR22E0Y-11□** | **AR22E5Y-11□** |
| | 2NO | **AR22E0Y-20□** | **AR22E5Y-20□** |
| | 2NC | **AR22E0Y-02□** | **AR22E5Y-02□** |
| | 2NO+2NC | **AR22E0Y-22□** | **AR22E5Y-22□** |

| Operator | Contact | Momentary action Type | Alternate action Type |
|---|---|---|---|
| Mushroom head with square bezel (29mm dia.) AF94-298 | 1NO | **AR22M4Y-10□** | — |
| | 1NC | **AR22M4Y-01□** | — |
| | 1NO+1NC | **AR22M4Y-11□** | — |
| | 2NO | **AR22M4Y-20□** | — |
| | 2NC | **AR22M4Y-02□** | — |
| | 2NO+2NC | **AR22M4Y-22□** | — |

**•Button color**

Replace the□ mark by the button color code

| Color | Green | Red | White | Blue | Yellow | Orange | Black |
|---|---|---|---|---|---|---|---|
| Code | G | R | W | S | Y | A | B |

Note: AR22V5R type: Red, yellow, black only

**•Available numbers of contact blocks**

| Momentary action | Alternate action Push-lock, turn-reset |
|---|---|
| 6-contact block | 4-contact block |

**•Contact arrangements**

Contact arrangements other than above are available

| Contact arrangement | 1NO | 1NC | 1NO+1NC | 2NO | 2NC | 3NO | 3NC |
|---|---|---|---|---|---|---|---|
| Code | 10 | 01 | 11 | 20 | 02 | 30 | 03 |

| Contact arrangement | 2NO+2NC | 4NO | 4NC | 5NO | 5NC | 3NO+3NC |
|---|---|---|---|---|---|---|
| Code | 22 | 40 | 04 | 50 | 05 | 33 |

**•Symbol mark** (For AR22FAR, FBR, EAR, EBR)

Replace the ■ mark by the symbol mark code

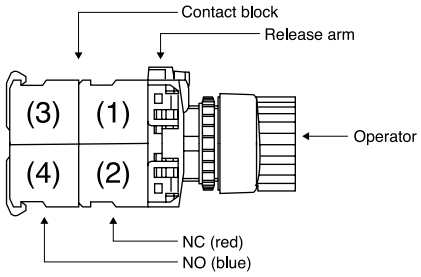
| Symbol mark | ◯ | | I | | Ⓣ | | ◯ | I | Ⓣ |
|---|---|---|---|---|---|---|---|---|---|
| Color of button | White | Black | White | Black | White | Black | Clear | | |
| Color of mark | Red | | Green | | Green | | Black | | |
| Code | 01 | 02 | 03 | 04 | 11 | 12 | 02B | 04B | 12B |

| Operator | Contact (The following contact is only available.) | Button color | Type | Contact operation | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Contact block | | Left | | Right | |
| | | | | Mounting position | Type | Free | Depressed | Free | Depressed |
| Pushbutton with selector ring (2-position) AF94-355 | 2NO+2NC | Green<br>Red<br>Black<br>White<br>Yellow<br>Orange<br>Blue | **AR22S1R-22G**<br>**AR22S1R-22R**<br>**AR22S1R-22B**<br>**AR22S1R-22W**<br>**AR22S1R-22Y**<br>**AR22S1R-22A**<br>**AR22S1R-22S** | (1) | NC | – | – | ● | – |
| | | | | (2) | NC | – | – | ● | – |
| | | | | (3) | NO | – | ● | – | ● |
| | | | | (4) | NO | – | ● | – | ● |
| | 2NO | Green<br>Red<br>Black<br>White<br>Yellow<br>Orange<br>Blue | **AR22S2R-20G**<br>**AR22S2R-20R**<br>**AR22S2R-20B**<br>**AR22S2R-20W**<br>**AR22S2R-20Y**<br>**AR22S2R-20A**<br>**AR22S2R-20S** | (1) | NO | – | ● | – | – |
| | | | | (2) | NO | – | – | – | ● |
| | | | | | | | | | |
| | 2NO+2NC | Green<br>Red<br>Black<br>White<br>Yellow<br>Orange<br>Blue | **AR22S2R-22G**<br>**AR22S2R-22R**<br>**AR22S2R-22B**<br>**AR22S2R-22W**<br>**AR22S2R-22Y**<br>**AR22S2R-22A**<br>**AR22S2R-22S** | (1) | NC | ● | – | ▬ | |
| | | | | (2) | NC | ▬ | | ● | – |
| | | | | (3) | NO | – | ● | – | – |
| | | | | (4) | NO | – | – | – | ● |
| | 2NO+2NC | Green<br>Red<br>Black<br>White<br>Yellow<br>Orange<br>Blue | **AR22S3R-22G**<br>**AR22S3R-22R**<br>**AR22S3R-22B**<br>**AR22S3R-22W**<br>**AR22S3R-22Y**<br>**AR22S3R-22A**<br>**AR22S3R-22S** | (1) | NC | – | – | ▬ | |
| | | | | (2) | NC | ▬ | | – | – |
| | | | | (3) | NO | – | ● | – | – |
| | | | | (4) | NO | – | – | – | ● |
| | 2NO+2NC | Green<br>Red<br>Black<br>White<br>Yellow<br>Orange<br>Blue | **AR22S6R-22G**<br>**AR22S6R-22R**<br>**AR22S6R-22B**<br>**AR22S6R-22W**<br>**AR22S6R-22Y**<br>**AR22S6R-22A**<br>**AR22S6R-22S** | (1) | NC | ● | – | – | Locked |
| | | | | (2) | NC | ● | – | – | |
| | | | | (3) | NO | – | ● | ● | |
| | | | | (4) | NO | – | ● | ● | |

Note: (1) to (4): Contact block mounting position

● Contact closed
– Contact open

**•Position of contact block**



## ■ Emergency stop pushbutton switches

⊖ (Direct opening action), conform to EN418

| Operator | Contact | Type |
|---|---|---|
| Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) AF97-70 | 1NC<br>1NO+1NC<br>2NC<br>2NO+2NC | **AR22V0R-01R**<br>**AR22V0R-11R**<br>**AR22V0R-02R**<br>**AR22V0R-22R** |
| Push-lock, turn-reset (40mm dia.) AF94-432 | 1NC<br>1NO+1NC<br>2NC<br>2NO+2NC | **AR22V2R-01R**<br>**AR22V2R-11R**<br>**AR22V2R-02R**<br>**AR22V2R-22R** |
| Push-lock, turn-reset (Soft-touch 29mm dia. with white arrow) AF99-317 | 1NC<br>1NO+1NC<br>2NC<br>2NO+2NC | **AR22VSR-01R**<br>**AR22VSR-11R**<br>**AR22VSR-02R**<br>**AR22VSR-22R** |
| Push-lock, turn-reset (29mm dia.) AF95-53 | 1NC<br>1NO+1NC<br>2NC<br>2NO+2NC | **AR22V4R-01R**<br>**AR22V4R-11R**<br>**AR22V4R-02R**<br>**AR22V4R-22R** |

Note: • Button color: Red only

| Operator | Contact | Type |
|---|---|---|
| Key release push-lock, turn-reset (40mm dia.) AF98-37 | 1NC<br>1NO+1NC<br>2NC<br>2NO+2NC | **AR22V7R-01R**<br>**AR22V7R-11R**<br>**AR22V7R-02R**<br>**AR22V7R-22R** |
| Push-lock, pull-reset (35mm dia.) AF94-52 | 1NC<br>1NO+1NC<br>2NC | **AR22Q2R-01R**<br>**AR22Q2R-11R**<br>**AR22Q2R-02R** |
| Unibody push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) KK03-037 | 1NC<br>1NO+1NC<br>2NC | **AR22VGE-01R**<br>**AR22VGE-11R**<br>**AR22VGE-02R** |

### •Contact arrangements

Contact arrangements other than above are available

| Contact arrangement | 1NO | 1NO+1NC | 2NC | 3NC | 2NO+2NC | 4NC |
|---|---|---|---|---|---|---|
| Code | 01 | 11 | 02 | 03 | 22 | 04 |

Note: • Except AR22Q2R and AR22VGE
• For AR22Q2R and AR22VGE, up to 2-contact block.

### ■ Emergency stop illuminated pushbutton switches

⊖ (Direct opening action), conform to EN418

| Operator | Transformer | Contact | LED lamp Type | Incandescent lamp Type | Neon lamp Type |
|---|---|---|---|---|---|
| Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) AF97-76 | Without | 1NC | **AR22V0L-01■3R** | **AR22V0L-01■4R** | — |
| | | 1NO+1NC | **AR22V0L-11■3R** | **AR22V0L-11■4R** | — |
| | | 2NC | **AR22V0L-02■3R** | **AR22V0L-02■4R** | — |
| | | 3NC | **AR22V0L-03■3R** | **AR22V0L-03■4R** | — |
| | With | 1NC | **AR22V0L-01■3R** | **AR22V0L-01■4R** | — |
| | | 1NO+1NC | **AR22V0L-11■3R** | **AR22V0L-11■4R** | — |
| | | 2NC | **AR22V0L-02■3R** | **AR22V0L-02■4R** | — |
| Push-lock, turn-reset (40mm dia.) AF94-307 | Without | 1NC | **AR22V2L-01■3R** | **AR22V2L-01■4R** | — |
| | | 1NO+1NC | **AR22V2L-11■3R** | **AR22V2L-11■4R** | — |
| | | 2NC | **AR22V2L-02■3R** | **AR22V2L-02■4R** | — |
| | | 3NC | **AR22V2L-03■3R** | **AR22V2L-03■4R** | — |
| | With | 1NC | **AR22V2L-01■3R** | **AR22V2L-01■4R** | — |
| | | 1NO+1NC | **AR22V2L-11■3R** | **AR22V2L-11■4R** | — |
| | | 2NC | **AR22V2L-02■3R** | **AR22V2L-02■4R** | — |
| Push-lock, turn-reset (Soft-touch 40mm dia. transparent in all colors with white arrow) AF97-76 | Without | 1NC | **AR22VDL-01■3R** | **AR22VDL-01■4R** | — |
| | | 1NO+1NC | **AR22VDL-11■3R** | **AR22VDL-11■4R** | — |
| | | 2NC | **AR22VDL-02■3R** | **AR22VDL-02■4R** | — |
| | | 3NC | **AR22VDL-03■3R** | **AR22VDL-03■4R** | — |
| | With | 1NC | **AR22VDL-01■3R** | **AR22VDL-01■4R** | — |
| | | 1NO+1NC | **AR22VDL-11■3R** | **AR22VDL-11■4R** | — |
| | | 2NC | **AR22VDL-02■3R** | **AR22VDL-02■4R** | — |
| Push-lock, turn-reset (40mm dia. transparent in all colors) AF94-364 | Without | 1NC | **AR22VAL-01■3R** | **AR22VAL-01■4R** | — |
| | | 1NO+1NC | **AR22VAL-11■3R** | **AR22VAL-11■4R** | — |
| | | 2NC | **AR22VAL-02■3R** | **AR22VAL-02■4R** | — |
| | | 3NC | **AR22VAL-03■3R** | **AR22VAL-03■4R** | — |
| | With | 1NC | **AR22VAL-01■3R** | **AR22VAL-01■4R** | — |
| | | 1NO+1NC | **AR22VAL-11■3R** | **AR22VAL-11■4R** | — |
| | | 2NC | **AR22VAL-02■3R** | **AR22VAL-02■4R** | — |
| Push-lock, turn-reset (Soft-touch 29mm dia. with white arrow) AF99-316 | Without | 1NC | **AR22VSL-01■3R** | **AR22VSL-01■4R** | — |
| | | 1NO+1NC | **AR22VSL-11■3R** | **AR22VSL-11■4R** | — |
| | | 2NC | **AR22VSL-02■3R** | **AR22VSL-02■4R** | — |
| | | 3NC | **AR22VSL-03■3R** | **AR22VSL-03■4R** | — |
| | With | 1NC | **AR22VSL-01■3R** | **AR22VSL-01■4R** | — |
| | | 1NO+1NC | **AR22VSL-11■3R** | **AR22VSL-11■4R** | — |
| | | 2NC | **AR22VSL-02■3R** | **AR22VSL-02■4R** | — |
| Unibody push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) | Without | 1NC | **AR22VGF-01E3R** | — | **AR22VGF-01■1R** |
| | | 1NO+1NC | **AR22VGF-11E3R** | — | **AR22VGF-11■1R** |
| | | 2NC | **AR22VGF-02E3R** | — | **AR22VGF-02■1R** |

Notes: • Button color: Red only • AR22VGF type: Lamp circuit contacts are provided, see page 43. • Contact arrangements indicated in the table can be supplied.

**•Voltage**

Replace the ■ mark by the lamp voltage code

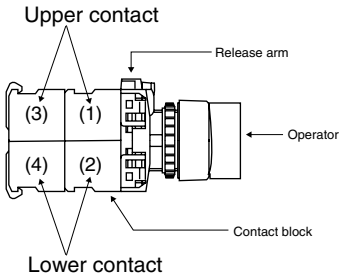
| Transformer | | Code LED | Incandescent | Neon |
|---|---|---|---|---|
| Without | 6V DC | 6 | — | — |
| | 6V AC | A | — | — |
| | 5V AC/DC | — | 5 | — |
| | 12V AC/DC | B | — | — |
| | 15V AC/DC | C | C | — |
| | 20V AC/DC | — | D | — |
| | 24V AC/DC | E | E | — |
| | 110V AC | — | — | H |
| | 120V AC | — | — | K |
| | 220V AC | — | — | M |
| | 240V AC | — | — | P |

Notes: AR22VGF: LED 24V AC/DC and neon only

| Transformer | | Code LED | Incandescent |
|---|---|---|---|
| With | 100-110V AC | H | H |
| | 115-127V AC | L | L |
| | 200-220V AC | M | M |
| | 230-254V AC | Q | Q |
| | 350-380V AC | S | S |
| | 400-440V AC | T | T |
| | 480V AC | V | V |
| | 500-550V AC | W | W |

## ■ Selector switches
### 2-position

| Operator | Operation | Knob color or key removable position | Contact | Type: Switch with round bezel | Type: Switch with square bezel | Contact operation (Example): Contact arrangement | Contact operation (Example): Operator position (Left / Right) |
|---|---|---|---|---|---|---|---|
| Knob AF94-310 | Maintained each 90° | Color code: B: Black (Standard) Color other than above are available (G: Green R: Red) | 1NO | **AR22PR-210B** | **AR22PY-210B** | 1NO (1) | Upper contact ③ ④ |
| | | | 1NC | **AR22PR-201B** | **AR22PY-201B** | | |
| | | | 1NO+1NC | **AR22PR-211B** | **AR22PY-211B** | | |
| | | | 2NO | **AR22PR-220B** | **AR22PY-220B** | | |
| | | | 2NC | **AR22PR-202B** | **AR22PY-202B** | | |
| | | | 2NO+2NC | **AR22PR-222B** | **AR22PY-222B** | | |
| | Spring return 60° | | 1NO | **AR22PR-010B** | **AR22PY-010B** | 1NC (1) | Upper contact ① ② |
| | | | 1NC | **AR22PR-001B** | **AR22PY-001B** | | |
| | | | 1NO+1NC | **AR22PR-011B** | **AR22PY-011B** | | |
| | | | 2NO | **AR22PR-020B** | **AR22PY-020B** | | |
| | | | 2NC | **AR22PR-002B** | **AR22PY-002B** | | |
| | | | 2NO+2NC | **AR22PR-022B** | **AR22PY-022B** | | |
| Lever AF94-324 | Maintained each 90° | | 1NO | **AR22WR-210B** | **AR22WY-210B** | 1NO+1NC (1) | Upper contact ③ ④ |
| | | | 1NC | **AR22WR-201B** | **AR22WY-201B** | | |
| | | | 1NO+1NC | **AR22WR-211B** | **AR22WY-211B** | | |
| | | | 2NO | **AR22WR-220B** | **AR22WY-220B** | (2) | Lower contact ① ② |
| | | | 2NC | **AR22WR-202B** | **AR22WY-202B** | | |
| | | | 2NO+2NC | **AR22WR-222B** | **AR22WY-222B** | | |
| | Spring return 60° | | 1NO | **AR22WR-010B** | **AR22WY-010B** | 2NO+2NC (1) | Upper contact ③ ④ |
| | | | 1NC | **AR22WR-001B** | **AR22WY-001B** | | |
| | | | 1NO+1NC | **AR22WR-011B** | **AR22WY-011B** | | |
| | | | 2NO | **AR22WR-020B** | **AR22WY-020B** | | |
| | | | 2NC | **AR22WR-002B** | **AR22WY-002B** | | |
| | | | 2NO+2NC | **AR22WR-022B** | **AR22WY-022B** | | |
| Cylindrical knob AF94-308 | Maintained each 90° | | 1NO | **AR22RR-210B** | **AR22RY-210B** | (3) | ③ ④ |
| | | | 1NC | **AR22RR-201B** | **AR22RY-201B** | | |
| | | | 1NO+1NC | **AR22RR-211B** | **AR22RY-211B** | | Lower contact |
| | | | 2NO | **AR22RR-220B** | **AR22RY-220B** | | |
| | | | 2NC | **AR22RR-202B** | **AR22RY-202B** | (2) | ① ② |
| | | | 2NO+2NC | **AR22RR-222B** | **AR22RY-222B** | | |
| | Spring return 60° | | 1NO | **AR22RR-010B** | **AR22RY-010B** | (4) | ① ② |
| | | | 1NC | **AR22RR-001B** | **AR22RY-001B** | | |
| | | | 1NO+1NC | **AR22RR-011B** | **AR22RY-011B** | | |
| | | | 2NO | **AR22RR-020B** | **AR22RY-020B** | | |
| | | | 2NC | **AR22RR-002B** | **AR22RY-002B** | | |
| | | | 2NO+2NC | **AR22RR-022B** | **AR22RY-022B** | | |
| Key AF94-311 | Maintained each 90° | ■: Key removable position ( ): Key type *See page 27* | 1NO | **AR22J□R-2■10( )** | **AR22JY-2■10( )** | | |
| | | | 1NC | **AR22J□R-2■01( )** | **AR22JY-2■01( )** | | |
| | | | 1NO+1NC | **AR22J□R-2■11( )** | **AR22JY-2■11( )** | | |
| | | | 2NO | **AR22J□R-2■20( )** | **AR22JY-2■20( )** | | |
| | | | 2NC | **AR22J□R-2■02( )** | **AR22JY-2■02( )** | | |
| | | | 2NO+2NC | **AR22J□R-2■22( )** | **AR22JY-2■22( )** | | |
| | Spring return 60° | | 1NO | **AR22J□R-0A10( )** | **AR22JY-0A10( )** | | |
| | | | 1NC | **AR22J□R-0A01( )** | **AR22JY-0A01( )** | | |
| | | | 1NO+1NC | **AR22J□R-0A11( )** | **AR22JY-0A11( )** | | |
| | | | 2NO | **AR22J□R-0A20( )** | **AR22JY-0A20( )** | | |
| | | | 2NC | **AR22J□R-0A02( )** | **AR22JY-0A02( )** | | |
| | | | 2NO+2NC | **AR22J□R-0A22( )** | **AR22JY-0A22( )** | | |




Notes: • (1) to (4): Contact block mounting position
• ① – ②, ③ – ④: Contact block terminal No.
• Contact arrangements: *See page 27*

● Contact closed

**• Operator**
Replace the □ mark by the cylinder key type code
Standard type: Blank
Long durability type: A

### 3-position

| Operator | Operation | Knob color | Contact | Type: Switch with round bezel | Type: Switch with square bezel | Contact operation (Example): Contact arrangement | Operation position: L C R | Operation position: L C R |
|---|---|---|---|---|---|---|---|---|
| Knob AF94-310 | Maintained each 45° | Color code: B: Black (Standard) Color other than above are available (G: Green R: Red) | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR22PR-311B**<br>**AR22PR-320B**<br>**AR22PR-302B**<br>**AR22PR-322B** | **AR22PY-311B**<br>**AR22PY-320B**<br>**AR22PY-302B**<br>**AR22PY-322B** | 1NO+1NC (1) (2) | Upper contact ③ ④ | Lower contact ① ② |
| | Spring/manual return each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR22PR-611B**<br>**AR22PR-620B**<br>**AR22PR-602B**<br>**AR22PR-622B** | **AR22PY-611B**<br>**AR22PY-620B**<br>**AR22PY-602B**<br>**AR22PY-622B** | | | |
| | Spring/manual return each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR22PR-711B**<br>**AR22PR-720B**<br>**AR22PR-702B**<br>**AR22PR-722B** | **AR22PY-711B**<br>**AR22PY-720B**<br>**AR22PY-702B**<br>**AR22PY-722B** | 1NO+1NC (1) (2) | Upper contact ③ ④ | Lower contact ① ② |
| | Spring return each 45° | | 2NO+2NC | **AR22PR-122B** | **AR22PY-122B** | 2NO+2NC (1) (2) (3) (4) | Upper contact ① ② ③ ④ | Lower contact ① ② ③ ④ |
| Lever AF94-324 | Maintained each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR22WR-311B**<br>**AR22WR-320B**<br>**AR22WR-302B**<br>**AR22WR-322B** | **AR22WY-311B**<br>**AR22WY-320B**<br>**AR22WY-302B**<br>**AR22WY-322B** | 1NO+1NC (1) (2) | Upper contact ③ ④ | Lower contact ① ② |
| | Spring/manual return each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR22WR-611B**<br>**AR22WR-620B**<br>**AR22WR-602B**<br>**AR22WR-622B** | **AR22WY-611B**<br>**AR22WY-620B**<br>**AR22WY-602B**<br>**AR22WY-622B** | | | |
| | Spring/manual return each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR22WR-711B**<br>**AR22WR-720B**<br>**AR22WR-702B**<br>**AR22WR-722B** | **AR22WY-711B**<br>**AR22WY-720B**<br>**AR22WY-702B**<br>**AR22WY-722B** | 1NO+1NC (1) (2) | Upper contact ③ ④ | Lower contact ① ② |
| | Spring return each 45° | | 2NO+2NC | **AR22WR-122B** | **AR22WY-122B** | 2NO+2NC (1) (2) (3) (4) | Upper contact ① ② ③ ④ | Lower contact ① ② ③ ④ |
| Cylindrical knob AF94-308 | Maintained each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR22RR-311B**<br>**AR22RR-320B**<br>**AR22RR-302B**<br>**AR22RR-322B** | **AR22RY-311B**<br>**AR22RY-320B**<br>**AR22RY-302B**<br>**AR22RY-322B** | 1NO+1NC (1) (2) | Upper contact ③ ④ | Lower contact ① ② |
| | Spring/manual return each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR22RR-611B**<br>**AR22RR-620B**<br>**AR22RR-602B**<br>**AR22RR-622B** | **AR22RY-611B**<br>**AR22RY-620B**<br>**AR22RY-602B**<br>**AR22RY-622B** | | | |
| | Spring/manual return each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR22RR-711B**<br>**AR22RR-720B**<br>**AR22RR-702B**<br>**AR22RR-722B** | **AR22RY-711B**<br>**AR22RY-720B**<br>**AR22RY-702B**<br>**AR22RY-722B** | 1NO+1NC (1) (2) | Upper contact ③ ④ | Lower contact ① ② |
| | Spring return each 45° | | 2NO+2NC | **AR22RR-122B** | **AR22RY-122B** | 2NO+2NC (1) (2) (3) (4) | Upper contact ① ② ③ ④ | Lower contact ① ② ③ ④ |

| Operator | Operation | Key removable position | Contact | Type: Switch with round bezel | Type: Switch with square bezel | Contact operation (Example): Contact arrangement | Operator position L C R | Operator position L C R |
|---|---|---|---|---|---|---|---|---|
| Key | Maintained each 45° | ■: Key removable position ( ): Key type | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR22J□R-3■11( )**<br>**AR22J□R-3■20( )**<br>**AR22J□R-3■02( )**<br>**AR22J□R-3■22( )** | **AR22JY-3■11( )**<br>**AR22JY-3■20( )**<br>**AR22JY-3■02( )**<br>**AR22JY-3■22( )** | 1NO+1NC (1) (2) | Upper contact ③ ④ | Lower contact ① ② |
| | Spring/manual return each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR22J□R-6■11( )**<br>**AR22J□R-6■20( )**<br>**AR22J□R-6■02( )**<br>**AR22J□R-6■22( )** | **AR22JY-6■11( )**<br>**AR22JY-6■20( )**<br>**AR22JY-6■02( )**<br>**AR22JY-6■22( )** | | | |
| | Spring/manual return each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR22J□R-7■11( )**<br>**AR22J□R-7■20( )**<br>**AR22J□R-7■02( )**<br>**AR22J□R-7■22( )** | **AR22JY-7■11( )**<br>**AR22JY-7■20( )**<br>**AR22JY-7■02( )**<br>**AR22JY-7■22( )** | 1NO+1NC (1) (2) | Upper contact ③ ④ | Lower contact ① ② |
| AF94-311 | Spring return each 45° | | 2NO+2NC | **AR22J□R-1E22( )** | **AR22JY-1E22( )** | 2NO+2NC (1) (2)<br>(3) (4) | Upper contact ① ②<br>③ ④ | Lower contact ① ②<br>③ ④ |

Notes: • Operator position L:Left, C:Center, R:Right
• (1) to (4): Contact block mounting position
• ①–②, ③–④: Contact block terminal No.

● Contact closed

### •Contact arrangements

Contact arrangements other than above are available

| Contact arrangement | 1NO | 1NC | 1NO+1NC | 2NO | 2NC | 3NO | 3NC |
|---|---|---|---|---|---|---|---|
| Code | 10 | 01 | 11 | 20 | 02 | 30 | 03 |

| Contact arrangement | 2NO+2NC | 4NO | 4NC | 5NO | 5NC | 3NO+3NC |
|---|---|---|---|---|---|---|
| Code | 22 | 40 | 04 | 50 | 05 | 33 |

### •Available numbers of contact blocks

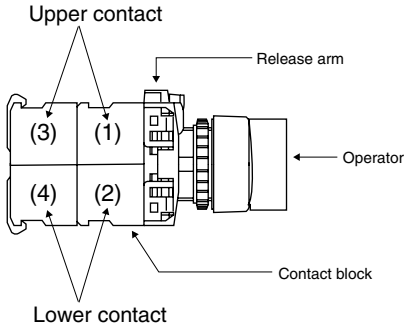
| Mainted | Spring return<br>Spring/manual return |
|---|---|
| 6-contact block | 4-contact block |

### • Key removable positions

| Code | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| Removable position | 45° 45° | 45° 45° | 45° 45° | 45° 45° | 45° 45° | 45° 45° | 45° 45° |
| AR22J□R-2 | ● | ● | – | ● | – | – | – |
| AR22J□R-0 | ● | – | – | – | – | – | – |
| AR22J□R-3 | ● | ● | ● | ● | ● | ● | ● |
| AR22J□R-6 | – | – | – | ● | ● | ● | – |
| AR22J□R-7 | ● | – | – | – | ● | – | ● |
| AR22J□R-1 | – | – | – | – | ● | – | – |

●: Available –: Not available

### • Position of contact block




### • Key code No.

Replace the ( ) mark with one of the following key code.
A, B, C, D, E and F
Standard key code is A.

### • Operator

Replace the □ mark by the cylinder key type code
Standard type: Blank
Long durability type: A

## ■ Selector switches (control type)

### 3-position

| Operator | Operation | Knob color or key removable position | Contact arrangement | Type Switch with round bezel | Switch with square bezel |
|---|---|---|---|---|---|
| Knob AF94-435 | Maintained each 45˚ | Color code: B: Black (Standard) Color other than above are available (G: Green R: Red) | Replace the ■ mark by the contact arrangement code (shown on next page). | **AR22PCR-3■B** | **AR22PCY-3■B** |
| | Spring/manual return each 45˚ | | | **AR22PCR-6■B** | **AR22PCY-6■B** |
| | Spring/manual return each 45˚ | | | **AR22PCR-7■B** | **AR22PCY-7■B** |
| | Spring return each 45˚ | | | **AR22PCR-1■B** | **AR22PCY-1■B** |
| Lever AF94-436 | Maintained each 45˚ | | Replace the ■ mark by the contact arrangement code (shown on next page). | **AR22WCR-3■B** | **AR22WCY-3■B** |
| | Spring/manual return each 45˚ | | | **AR22WCR-6■B** | **AR22WCY-6■B** |
| | Spring/manual return each 45˚ | | | **AR22WCR-7■B** | **AR22WCY-7■B** |
| | Spring return each 45˚ | | | **AR22WCR-1■B** | **AR22WCY-1■B** |
| Cylindrical knob AF94-433 | Maintained each 45˚ | | Replace the ■ mark by the contact arrangement code (shown on next page). | **AR22RCR-3■B** | **AR22RCY-3■B** |
| | Spring/manual return each 45˚ | | | **AR22RCR-6■B** | **AR22RCY-6■B** |
| | Spring/manual return each 45˚ | | | **AR22RCR-7■B** | **AR22RCY-7■B** |
| | Spring return each 45˚ | | | **AR22RCR-1■B** | **AR22RCY-1■B** |
| Key AF94-434 | Maintained each 45˚ | Replace the □ mark by the key removable position code: A, B, C, D, E F or G | Replace the ■ mark by the contact arrangement code (shown on next page). | **AR22JCR-3□■( )** | **AR22JCY-3■□( )** |
| | Spring/manual return each 45˚ | | | **AR22JCR-6□■( )** | **AR22JCY-6■□( )** |
| | Spring/manual return each 45˚ | | | **AR22JCR-7□■( )** | **AR22JCY-7■□( )** |
| | Spring return each 45˚ | | | **AR22JCR-1E■( )** | **AR22JCY-1E■( )** |

### • Key removable positions

| Code | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| Removable position | | | | | | | |
| AR22JCR-3 | ● | ● | ● | ● | ● | ● | ● |
| AR22JCR-6 | – | – | – | ● | ● | ● | – |
| AR22JCR-7 | ● | – | – | – | ● | – | ● |
| AR22JCR-1 | – | – | – | – | ● | – | – |

●: Available –: Not available

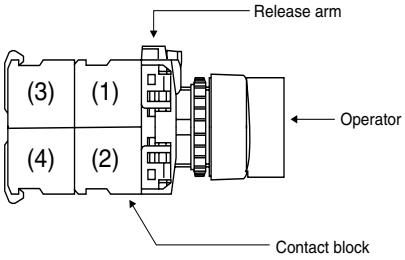
**•Key code No.**
Replace the ( ) mark with one of the following key code.
A, B, C, D, E and F
Standard key code is A.

- **Contact arrangement code (Typical example)**

| Contact arrangement | Contact arrangement code | Contact operation: Contact block: Mounting position | Contact block: Type | Operator position: Left | Center | Right |
|---|---|---|---|---|---|---|
| 2NC | 01F | (1) | NC | ▬ | ▬ | |
| | | (2) | NC | | ▬ | ▬ |
| | | – | – | – | – | – |
| | | – | – | – | – | – |
| 2NO+2NC | 014 | (1) | NC | ▬ | ▬ | |
| | | (2) | NC | | ▬ | ▬ |
| | | (3) | NO | | | ● |
| | | (4) | NO | ● | | |
| 4NC | 01J | (1) | NC | ▬ | ▬ | |
| | | (2) | NC | | ▬ | ▬ |
| | | (3) | NC | ▬ | ▬ | |
| | | (4) | NC | | ▬ | ▬ |
| 2NO+2NC | 024 | (1) | NC | ▬ | ▬ | |
| | | (2) | NC | | ● | |
| | | (3) | NO | | | ● |
| | | (4) | NO | ● | | ● |
| 2NO+2NC | 03C* (Maintained only) | (1) | NC | ▬ | ▬ | |
| | | (2) | NC | | | ● |
| | | (3) | NO | | | ● |
| | | (4) | NO | ● | | |
| 2NO+2NC | 044* | (1) | NC | ▬ | ▬ | |
| | | (2) | NC | | ● | |
| | | (3) | NO | | | ● |
| | | (4) | NO | ● | | |
| 2NO+2NC | 054 | (1) | NC | ▬ | ▬ | |
| | | (2) | NC | | ● | |
| | | (3) | NO | | | ● |
| | | (4) | NO | | | ● |
| 2NO+2NC | 064 | (1) | NC | | ▬ | ▬ |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | |
| | | (4) | NO | ● | | ● |
| 1NO+1NC | 07F | (1) | NC | | ▬ | ▬ |
| | | (2) | NO | | | ● |
| | | – | – | – | – | – |
| | | – | – | – | – | – |
| 2NO+2NC | 07C* (Maintained only) | (1) | NC | | ▬ | ▬ |
| | | (2) | NC | | | ● |
| | | (3) | NO | ● | | |
| | | (4) | NO | ● | | |
| 2NO+2NC | 084 | (1) | NC | | ▬ | ▬ |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | |
| | | (4) | NO | ● | | |
| 2NO+2NC | 094* | (1) | NC | | ▬ | ▬ |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | |
| | | (4) | NO | | | ● |
| 2NO+2NC | 104 | (1) | NC | | ● | |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | ● |
| | | (4) | NO | ● | | ● |
| 2NO+2NC | 11C* (Maintained only) | (1) | NC | | ● | |
| | | (2) | NC | | | ● |
| | | (3) | NO | ● | | ● |
| | | (4) | NO | ● | | |

Notes: ●: Contact closed Blank: Contact open
* There may be some overlap in the contact when switching between notches.

- **Position of contact block**




Notes: Contact block color
NC: red
NO: blue

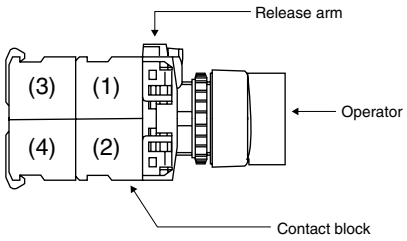
- **Contact arrangement code (Typical example)**

| Contact arrangement | Contact arrangement code | Contact operation | | | | |
|---|---|---|---|---|---|---|
| | | Contact block | | Operator position | | |
| | | Mounting position | Type | Left | Center | Right |
| 2NO+2NC | 124* | (1) | NC | | ● | |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | ● |
| | | (4) | NO | ● | | |
| 2NO+2NC | 134* | (1) | NC | | ● | |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | ● |
| | | (4) | NO | | | ● |
| 3NO+1NC | 14D* (Maintained only) | (1) | NO | ● | | |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | |
| | | (4) | NO | | | ● |
| 3NO+1NC | 15A* | (1) | NO | | | ● |
| | | (2) | NC | | ● | |
| | | (3) | NO | | | ● |
| | | (4) | NO | ● | | |
| 2NO+2NC | 164 | (1) | NC | | ● | |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | |
| | | (4) | NO | ● | | |
| 2NO+2NC | 174* | (1) | NC | | ● | |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | |
| | | (4) | NO | | | ● |
| 2NO+2NC | 184 | (1) | NC | | ● | |
| | | (2) | NC | | ● | |
| | | (3) | NO | | | ● |
| | | (4) | NO | | | ● |

Notes: ●: Contact closed Blank: Contact open
* There may be some overlap in the contact when switching between notches.

| Contact arrangement | Contact arrangement code | Contact operation | | | | |
|---|---|---|---|---|---|---|
| | | Contact block | | Operator position | | |
| | | Mounting position | Type | Left | Center | Right |
| 2NO+2NC | 194 | (1) | NC | | ▬ | ▬ |
| | | (2) | NC | ▬ | ▬ | |
| | | (3) | NO | ● | | |
| | | (4) | NO | | | ● |
| 4NO | 20B | (1) | NO | | | ● |
| | | (2) | NO | ● | | |
| | | (3) | NO | | | ● |
| | | (4) | NO | ● | | |

- **Position of contact block**




Notes: Contact block color
NC: red
NO: blue

### 4, 5-position

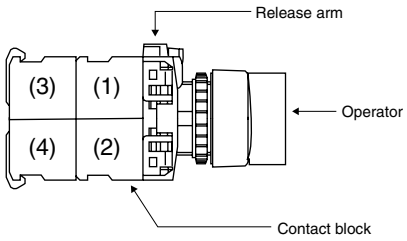
| Operator | Contact (The following contact is only available.) | Operation | Knob color | Contact arrangement | Type Switch with round bezel | Switch with square bezel |
|---|---|---|---|---|---|---|
| Knob AF94-435 | 2NO+2NC | 4-position maintained | Color code: B: Black (Standard) Color other than above are available (G: Green R: Red) | Replace the ■ mark by the contact arrangement code (shown below) | **AR22PCR-4■B** | **AR22PCY-4■B** |
| | | 5-position maintained | | | **AR22PCR-5■B** | **AR22PCY-5■B** |
| Lever AF94-436 | 2NO+2NC | 4-position maintained | | | **AR22WCR-4■B** | **AR22WCY-4■B** |
| | | 5-position maintained | | | **AR22WCR-5■B** | **AR22WCY-5■B** |
| Cylindrical knob AF94-433 | 2NO+2NC | 4-position maintained | | | **AR22RCR-4■B** | **AR22RCY-4■B** |
| | | 5-position maintained | | | **AR22RCR-5■B** | **AR22RCY-5■B** |

### ● Contact arrangement code

| Position | Contact arrangement | Contact arrangement code | Contact operation: Contact block: Mounting position | Contact block: Type | Operator position 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|
| 4-position | 2NO+2NC | 41C* (Maintained only) | (1) | NC | | | ● | | |
| | | | (2) | NC | ● | | | | |
| | | | (3) | NO | | ● | | | |
| | | | (4) | NO | | | | ● | |
| 5-position | 2NO+2NC | 51C* (Maintained only) | (1) | NC | | | | ● | |
| | | | (2) | NC | | ● | | | |
| | | | (3) | NO | ● | | | | |
| | | | (4) | NO | | | | | ● |

Notes: ●: Contact closed
* There may be some overlap in the contact when switching between notches.

### • Position of contact block




Notes: Contact block color
NC: red
NO: blue

### Operator position

**4-position** **5-position**

## ■ Illuminated selector switches

### 2-position

| Operator | Operation | Contact | LED lamp | | Incandescent lamp | |
|---|---|---|---|---|---|---|
| | | | Transformer | Type | Transformer | Type |
| Knob | Maintained | 1NO<br>1NC<br>1NO+1NC<br>2NO+2NC | Without | **AR22PL-210■3□**<br>**AR22PL-201■3□**<br>**AR22PL-211■3□**<br>**AR22PL-222■3□** | Without | **AR22PL-210■4□**<br>**AR22PL-201■4□**<br>**AR22PL-211■4□**<br>**AR22PL-222■4□** |
| | each 90° | 1NO<br>1NC<br>1NO+1NC<br>2NO | With | **AR22PL-210■3□**<br>**AR22PL-201■3□**<br>**AR22PL-211■3□**<br>**AR22PL-220■3□** | With | **AR22PL-210■4□**<br>**AR22PL-201■4□**<br>**AR22PL-211■4□**<br>**AR22PL-220■4□** |
| | Spring return | 1NO<br>1NC<br>1NO+1NC<br>2NO | Without | **AR22PL-010■3□**<br>**AR22PL-001■3□**<br>**AR22PL-011■3□**<br>**AR22PL-020■3□** | Without | **AR22PL-010■4□**<br>**AR22PL-001■4□**<br>**AR22PL-011■4□**<br>**AR22PL-020■4□** |
| <br>AF94-306 | 60° | 1NO<br>1NC<br>1NO+1NC<br>2NO | With | **AR22PL-010■3□**<br>**AR22PL-001■3□**<br>**AR22PL-011■3□**<br>**AR22PL-020■3□** | With | **AR22PL-010■4□**<br>**AR22PL-001■4□**<br>**AR22PL-011■4□**<br>**AR22PL-020■4□** |
| Knob with square bezel | Maintained | 1NO<br>1NC<br>1NO+1NC<br>2NO+2NC | Without | **AR22PP-210■3□**<br>**AR22PP-201■3□**<br>**AR22PP-211■3□**<br>**AR22PP-222■3□** | Without | **AR22PP-210■4□**<br>**AR22PP-201■4□**<br>**AR22PP-211■4□**<br>**AR22PP-222■4□** |
| | each 90° | 1NO<br>1NC<br>1NO+1NC<br>2NO | With | **AR22PP-210■3□**<br>**AR22PP-201■3□**<br>**AR22PP-211■3□**<br>**AR22PP-220■3□** | With | **AR22PP-210■4□**<br>**AR22PP-201■4□**<br>**AR22PP-211■4□**<br>**AR22PP-220■4□** |
| | Spring return | 1NO<br>1NC<br>1NO+1NC<br>2NO | Without | **AR22PP-010■3□**<br>**AR22PP-001■3□**<br>**AR22PP-011■3□**<br>**AR22PP-020■3□** | Without | **AR22PP-010■4□**<br>**AR22PP-001■4□**<br>**AR22PP-011■4□**<br>**AR22PP-020■4□** |
| <br>AF94-360 | 60° | 1NO<br>1NC<br>1NO+1NC<br>2NO | With | **AR22PP-010■3□**<br>**AR22PP-001■3□**<br>**AR22PP-011■3□**<br>**AR22PP-020■3□** | With | **AR22PP-010■4□**<br>**AR22PP-001■4□**<br>**AR22PP-011■4□**<br>**AR22PP-020■4□** |

### 3-position

| Operator | Operation | | Contact | LED lamp | | Incandescent lamp | |
|---|---|---|---|---|---|---|---|
| | | | | Transformer | Type | Transformer | Type |
| Knob | Maintained | | 1NO+1NC<br>2NO+2NC | Without | **AR22PL-311■3□**<br>**AR22PL-322■3□** | Without | **AR22PL-311■4□**<br>**AR22PL-322■4□** |
| | each 45° | | 1NO+1NC | With | **AR22PL-311■3□** | | **AR22PL-311■4□** |
| | Spring/manual return | | 1NO+1NC<br>1NO+1NC | Without<br>With | **AR22PL-611■3□**<br>**AR22PL-611■3□** | Without<br>With | **AR22PL-611■4□**<br>**AR22PL-611■4□** |
| <br>AF94-306 | each 45° | | 1NO+1NC<br>1NO+1NC | Without<br>With | **AR22PL-711■3□**<br>**AR22PL-711■3□** | Without<br>With | **AR22PL-711■4□**<br>**AR22PL-711■4□** |
| Knob with square bezel | Maintained | | 1NO+1NC<br>2NO+2NC | Without | **AR22PP-311■3□**<br>**AR22PP-322■3□** | Without | **AR22PP-311■4□**<br>**AR22PP-322■4□** |
| | each 45° | | 1NO+1NC | With | **AR22PP-311■3□** | | **AR22PP-311■4□** |
| | Spring/manual return | | 1NO+1NC<br>1NO+1NC | Without<br>With | **AR22PP-611■3□**<br>**AR22PP-611■3□** | Without<br>With | **AR22PP-611■4□**<br>**AR22PP-611■4□** |
| <br>AF94-360 | each 45° | | 1NO+1NC<br>1NO+1NC | Without<br>With | **AR22PP-711■3□**<br>**AR22PP-711■3□** | Without<br>With | **AR22PP-711■4□**<br>**AR22PP-711■4□** |

Note: □, ■ *See page 33*

• Replace the ■ mark by the following lamp voltage code

| Transformer | Voltage | Code LED | Incandescent |
|---|---|---|---|
| Without | 5V AC/DC | – | 5 |
| | 6V DC | 6 | – |
| | 6V AC | A | – |
| | 12V AC/DC | B | – |
| | 15V AC/DC | C | C |
| | 20V AC/DC | – | D |
| | 24V AC/DC | E | E |
| With | 100-110V AC | H | H |
| | 115-127V AC | L | L |
| | 200-220V AC | M | M |
| | 230-254V AC | Q | Q |
| | 350-380V AC | S | S |
| | 400-440V AC | T | T |
| | 480V AC | V | V |
| | 500-550V AC | W | W |

• Replace the □ mark by the following knob color code

| Color | Green | Red | White | Blue | Yellow | Orange |
|---|---|---|---|---|---|---|
| Code | G | R | W | S | Y | A |

• Up to 4-contact of contact arrangement can be made.
Available numbers of contacts are as follow.

| No. of position | Operation | Without transformer | With transformer |
|---|---|---|---|
| 2-position | Maintained | 4-contact | 3-contact |
| | Spring return | 3-contact | 2-contact |
| 3-position | Maintained | 4-contact | 3-contact |
| | Spring/manual return | 3-contact | 2-contact |

## ● Contact arrangement and operator position

2-position

| Transformer | Contact arrangement | Contact block | | Operator position | |
|---|---|---|---|---|---|
| | | Mounting position | Type | Left | Right |
| With/without | 1NO | (1) | NO | – | ● |
| With/without | 1NC | (1) | NC | ● | – |
| Without | 1NO+1NC | (1) | NO | – | ● |
| | | (2) | NC | ● | – |
| With | 1NO+1NC | (1) | NC | ● | – |
| | | (2) | NO | – | ● |
| With/without | 2NO | (1) | NO | – | ● |
| | | (2) | NO | – | ● |
| Without | 2NO+2NC *1 | (1) | NO | – | ● |
| | | (2) | NC | ● | – |
| | | (3) | NO | – | ● |
| | | (4) | NC | ● | – |

Notes: *1 : AR22PL-2, AR22PP-2
● : Contact closed, – : Contact open

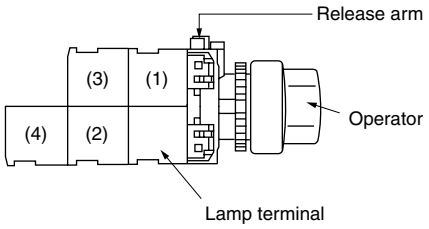
3-position

| Transformer | Contact arrangement | Contact block | | Operator position | | |
|---|---|---|---|---|---|---|
| | | Mounting position | Type | Left | Center | Right |
| Without | 1NO+1NC *1 | (1) | NO | ● | – | – |
| | | (2) | NC | – | – | ● |
| | 1NO+1NC *2 | (1) | NO | – | – | ● |
| | | (2) | NC | ● | – | – |
| | 2NO+2NC *3 | (1) | NO | ● | – | – |
| | | (2) | NC | – | – | ● |
| | | (3) | NO | ● | – | – |
| | | (4) | NC | – | – | ● |
| With | 1NO+1NC *1 | (1) | NC | – | – | ● |
| | | (2) | NO | ● | – | – |
| | 1NO+1NC *2 | (1) | NC | ● | – | – |
| | | (2) | NO | – | – | ● |

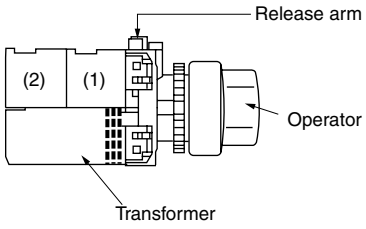
Notes: *1 : AR22PL-3, 6 AR22PP-3, 6 *3 : AR22PL-3 AR22PP-3
*2 : AR22PL-7, AR22PP-7
● : Contact closed, – : Contact open

## ● Position of contact block

Without transformer




With transformer



## ■ Pilot lights/standard

| Lens | Transformer | LED lamp Lamp voltage | Type | Incandescent lamp Lamp voltage | Type |
|---|---|---|---|---|---|
| Dome AF94-333 | Without | 6V AC | **DR22D0L-A3□** | 5.5V AC/DC | **DR22D0L-54□** |
| | | 6V DC | **DR22D0L-63□** | — | **—** |
| | | 12V AC/DC | **DR22D0L-B3□** | 15V AC/DC | **DR22D0L-C4□** |
| | | 24V AC/DC | **DR22D0L-E3□** | 24V AC/DC | **DR22D0L-E4□** |
| | With | 100–110V AC | **DR22D0L-H3□** | 100–110V AC | **DR22D0L-H4□** |
| | | 200–220V AC | **DR22D0L-M3□** | 200–220V AC | **DR22D0L-M4□** |
| Extended round AF94-332 | Without | 6V AC | **DR22E3L-A3□** | 5.5V AC/DC | **DR22E3L-54□** |
| | | 6V DC | **DR22E3L-63□** | — | **—** |
| | | 12V AC/DC | **DR22E3L-B3□** | 15V AC/DC | **DR22E3L-C4□** |
| | | 24V AC/DC | **DR22E3L-E3□** | 24V AC/DC | **DR22E3L-E4□** |
| | With | 100–110V AC | **DR22E3L-H3□** | 100–110V AC | **DR22E3L-H4□** |
| | | 200–220V AC | **DR22E3L-M3□** | 200–220V AC | **DR22E3L-M4□** |
| Faceted AF96-189 | Without | 6V AC | **DR22K0L-A3□** | 5.5V AC/DC | **DR22K0L-54□** |
| | | 6V DC | **DR22K0L-63□** | — | **—** |
| | | 12V AC/DC | **DR22K0L-B3□** | 15V AC/DC | **DR22K0L-C4□** |
| | | 24V AC/DC | **DR22K0L-E3□** | 24V AC/DC | **DR22K0L-E4□** |
| | With | 100–110V AC | **DR22K0L-H3□** | 100–110V AC | **DR22K0L-H4□** |
| | | 200–220V AC | **DR22K0L-M3□** | 200–220V AC | **DR22K0L-M4□** |
| Flush square AF94-330 | Without | 6V AC | **DR22F3M-A3□** | 5.5V AC/DC | **DR22F3M-54□** |
| | | 6V DC | **DR22F3M-63□** | — | **—** |
| | | 12V AC/DC | **DR22F3M-B3□** | 15V AC/DC | **DR22F3M-C4□** |
| | | 24V AC/DC | **DR22F3M-E3□** | 24V AC/DC | **DR22F3M-E4□** |
| | With | 100–110V AC | **DR22F3M-H3□** | 100–110V AC | **DR22F3M-H4□** |
| | | 200–220V AC | **DR22F3M-M3□** | 200–220V AC | **DR22F3M-M4□** |
| Flush square (Transparent lens) AF94-443 | Without | 6V AC | **DR22F4M-A3□** | 5.5V AC/DC | **DR22F4M-54□** |
| | | 6V DC | **DR22F4M-63□** | — | **—** |
| | | 12V AC/DC | **DR22F4M-B3□** | 15V AC/DC | **DR22F4M-C4□** |
| | | 24V AC/DC | **DR22F4M-E3□** | 24V AC/DC | **DR22F4M-E4□** |
| | With | 100–110V AC | **DR22F4M-H3□** | 100–110V AC | **DR22F4M-H4□** |
| | | 200–220V AC | **DR22F4M-M3□** | 200–220V AC | **DR22F4M-M4□** |
| Flush square (12mm high frame) AF95-685 | Without | 6V AC | **DR22F5M-A3□** | 5.5V AC/DC | **DR22F5M-54□** |
| | | 6V DC | **DR22F5M-63□** | — | **—** |
| | | 12V AC/DC | **DR22F5M-B3□** | 15V AC/DC | **DR22F5M-C4□** |
| | | 24V AC/DC | **DR22F5M-E3□** | 24V AC/DC | **DR22F5M-E4□** |
| | With | 100–110V AC | **DR22F5M-H3□** | 100–110V AC | **DR22F5M-H4□** |
| | | 200–220V AC | **DR22F5M-E3□** | 200–220V AC | **DR22F5M-M4□** |
| Extended square AF94-380 | Without | 6V AC | **DR22E3M-A3□** | 5.5V AC/DC | **DR22E3M-54□** |
| | | 6V DC | **DR22E3M-63□** | — | **—** |
| | | 12V AC/DC | **DR22E3M-B3□** | 15V AC/DC | **DR22E3M-C4□** |
| | | 24V AC/DC | **DR22E3M-E3□** | 24V AC/DC | **DR22E3M-E4□** |
| | With | 100–110V AC | **DR22E3M-H3□** | 100–110V AC | **DR22E3M-H4□** |
| | | 200–220V AC | **DR22E3M-M3□** | 200–220V AC | **DR22E3M-M4□** |
| Flush rectangular AF96-237 | Without | 6V AC | **DR22E3N-A3□** | 5.5V AC/DC | **DR22E3N-54□** |
| | | 6V DC | **DR22E3N-63□** | — | **—** |
| | | 12V AC/DC | **DR22E3N-B3□** | 15V AC/DC | **DR22E3N-C4□** |
| | | 24V AC/DC | **DR22E3N-E3□** | 24V AC/DC | **DR22E3N-E4□** |
| | With | 100–110V AC | **DR22E3N-H3□** | 100–110V AC | **DR22E3N-H4□** |
| | | 200–220V AC | **DR22E3N-M3□** | 200–220V AC | **DR22E3N-M4□** |
| Extended round with square bezel AF94-331 | Without | 6V AC | **DR22E3P-A3□** | 5.5V AC/DC | **DR22E3P-54□** |
| | | 6V DC | **DR22E3P-63□** | — | **—** |
| | | 12V AC/DC | **DR22E3P-B3□** | 15V AC/DC | **DR22E3P-C4□** |
| | | 24V AC/DC | **DR22E3P-E3□** | 24V AC/DC | **DR22E3P-E4□** |
| | With | 100–110V AC | **DR22E3P-H3□** | 100–110V AC | **DR22E3P-H4□** |
| | | 200–220V AC | **DR22E3P-M3□** | 200–220V AC | **DR22E3P-M4□** |

Note: □ *See page 37*

## ■ Pilot lights/short-body without transformer

| Lens | LED lamp | | Incandescent lamp | |
|---|---|---|---|---|
| | Lamp voltage | Type | Lamp voltage | Type |
| Dome AF98-88 | 5.5V AC/DC | — | 5.5V AC/DC | **DR22D0L-58□** |
| | 6V AC<br>6V DC<br>12V AC/DC | **DR22D0L-A9□**<br>**DR22D0L-69□**<br>**DR22D0L-B9□** | 6V AC<br>6V DC<br>15V AC/DC | —<br>—<br>**DR22D0L-C8□** |
| | 24V AC/DC | **DR22D0L-E9□** | 24V AC/DC | **DR22D0L-E8□** |
| Extended round AF98-90 | 5.5V AC/DC | — | 5.5V AC/DC | **DR22E3L-58□** |
| | 6V AC<br>6V DC<br>12V AC/DC | **DR22E3L-A9□**<br>**DR22E3L-69□**<br>**DR22E3L-B9□** | 6V AC<br>6V DC<br>15V AC/DC | —<br>—<br>**DR22E3L-C8□** |
| | 24V AC/DC | **DR22E3L-E9□** | 24V AC/DC | **DR22E3L-E8□** |
| Faceted AF98-89 | 5.5V AC/DC | — | 5.5V AC/DC | **DR22K0L-58□** |
| | 6V AC<br>6V DC<br>12V AC/DC | **DR22K0L-A9□**<br>**DR22K0L-69□**<br>**DR22K0L-B9□** | 6V AC<br>6V DC<br>15V AC/DC | —<br>—<br>**DR22K0L-C8□** |
| | 24V AC/DC | **DR22K0L-E9□** | 24V AC/DC | **DR22K0L-E8□** |
| Flush square AF98-92 | 5.5V AC/DC | — | 5.5V AC/DC | **DR22F3M-58□** |
| | 6V AC<br>6V DC<br>12V AC/DC | **DR22F3M-A9□**<br>**DR22F3M-69□**<br>**DR22F3M-B9□** | 6V AC<br>6V DC<br>15V AC/DC | —<br>—<br>**DR22F3M-C8□** |
| | 24V AC/DC | **DR22F3M-E9□** | 24V AC/DC | **DR22F3M-E8□** |
| Flush square (Transparent lens) AF98-92 | 5.5V AC/DC | — | 5.5V AC/DC | **DR22F4M-58□** |
| | 6V AC<br>6V DC<br>12V AC/DC | **DR22F4M-A9□**<br>**DR22F4M-69□**<br>**DR22F4M-B9□** | 6V AC<br>6V DC<br>15V AC/DC | —<br>—<br>**DR22F4M-C8□** |
| | 24V AC/DC | **DR22F4M-E9□** | 24V AC/DC | **DR22F4M-E8□** |
| Flush square (12mm high frame) AF98-94 | 5.5V AC/DC | — | 5.5V AC/DC | **DR22F5M-58□** |
| | 6V AC<br>6V DC<br>12V AC/DC | **DR22F5M-A9□**<br>**DR22F5M-69□**<br>**DR22F5M-B9□** | 6V AC<br>6V DC<br>15V AC/DC | —<br>—<br>**DR22F5M-C8□** |
| | 24V AC/DC | **DR22F5M-E9□** | 24V AC/DC | **DR22F5M-E8□** |
| Extended square AF98-93 | 5.5V AC/DC | — | 5.5V AC/DC | **DR22E3M-58□** |
| | 6V AC<br>6V DC<br>12V AC/DC | **DR22E3M-A9□**<br>**DR22E3M-69□**<br>**DR22E3M-B9□** | 6V AC<br>6V DC<br>15V AC/DC | —<br>—<br>**DR22E3M-C8□** |
| | 24V AC/DC | **DR22E3M-E9□** | 24V AC/DC | **DR22E3M-E8□** |
| Flush rectangular KK02-234B | 5.5V AC/DC | — | 5.5V AC/DC | **DR22E3N-58□** |
| | 6V AC<br>6V DC<br>12V AC/DC | **DR22E3N-A9□**<br>**DR22E3N-69□**<br>**DR22E3N-B9□** | 6V AC<br>6V DC<br>15V AC/DC | —<br>—<br>**DR22E3N-C8□** |
| | 24V AC/DC | **DR22E3N-E9□** | 24V AC/DC | **DR22E3N-E8□** |
| Extended round with square bezel AF98-91 | 5.5V AC/DC | — | 5.5V AC/DC | **DR22E3P-58□** |
| | 6V AC<br>6V DC<br>12V AC/DC | **DR22E3P-A9□**<br>**DR22E3P-69□**<br>**DR22E3P-B9□** | 6V AC<br>6V DC<br>15V AC/DC | —<br>—<br>**DR22E3P-C8□** |
| | 24V AC/DC | **DR22E3P-E9□** | 24V AC/DC | **DR22E3P-E8□** |

Note: □ *See page 37*

## ■ Pilot lights/short-body with transformer

| Lens | LED lamp<br>Lamp voltage Type | Incandescent lamp<br>Lamp voltage Type |
|---|---|---|
| Dome AF97-137 | 100–110V AC **DR22D0L-H9□**<br>200–220V AC **DR22D0L-M9□** | 100–110V AC **DR22D0L-H8□**<br>200–220V AC **DR22D0L-M8□** |
| Extended round AF97-138 | 100–110V AC **DR22E3L-H9□**<br>200–220V AC **DR22E3L-M9□** | 100–110V AC **DR22E3L-H8□**<br>200–220V AC **DR22E3L-M8□** |
| Faceted KK02-130A | 100–110V AC **DR22K0L-H9□**<br>200–220V AC **DR22K0L-M9□** | 100–110V AC **DR22K0L-H8□**<br>200–220V AC **DR22K0L-M8□** |
| Flush square AF97-134 | 100–110V AC **DR22F3M-H9□**<br>200–220V AC **DR22F3M-M9□** | 100–110V AC **DR22F3M-H8□**<br>200–220V AC **DR22F3M-M8□** |
| Flush square (Transparent lens) AF97-133 | 100–110V AC **DR22F4M-H9□**<br>200–220V AC **DR22F4M-M9□** | 100–110V AC **DR22F4M-H8□**<br>200–220V AC **DR22F4M-M8□** |
| Flush square (12mm high frame) AF97-136 | 100–110V AC **DR22F5M-H9□**<br>200–220V AC **DR22F5M-M9□** | 100–110V AC **DR22F5M-H8□**<br>200–220V AC **DR22F5M-M8□** |
| Extended square KK02-134A | 100–110V AC **DR22E3M-H9□**<br>200–220V AC **DR22E3M-M9□** | 100–110V AC **DR22E3M-H8□**<br>200–220V AC **DR22E3M-M8□** |
| Flush rectangular KK02-235B | 100–110V AC **DR22E3N-H9□**<br>200–220V AC **DR22E3N-M9□** | 100–110V AC **DR22E3N-H8□**<br>200–220V AC **DR22E3N-M8□** |
| Extended round with square bezel AF97-135 | 100–110V AC **DR22E3P-H9□**<br>200–220V AC **DR22E3P-M9□** | 100–110V AC **DR22E3P-H8□**<br>200–220V AC **DR22E3P-M8□** |

Note: □ *See page 37*

- **Lens color**

Replace the □ mark by the following lens color code

| Color | Green | Red | White | Blue | Yellow | Orange |
|---|---|---|---|---|---|---|
| Code | G | R | W | S | Y | A |

- **Lamp voltage**

Available lamp voltage are as follow.

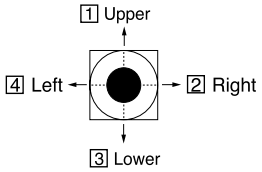
| Description | Voltage | Code | | | |
|---|---|---|---|---|---|
| | | Standard type | | Short-body type | |
| | | LED | Incandescent | LED | Incandescent |
| Without transformer | 5.5V AC/DC | – | 54 | – | 58 |
| | 6V AC | A3 | – | A9 | – |
| | 6V DC | 63 | – | 69 | – |
| | 12V AC/DC | B3 | – | B9 | – |
| | 15V AC/DC | C3 | C4 | C9 | C8 |
| | 20V AC/DC | – | D4 | – | D8 |
| | 24V AC/DC | E3 | E4 | E9 | E8 |
| With transformer | 100-110V AC | H3 | H4 | H9 | H8 |
| | 115-127V AC | L3 | L4 | L9 | L8 |
| | 200-220V AC | M3 | M4 | M9 | M8 |
| | 230-254V AC | Q3 | Q4 | – | – |
| | 350-380V AC | S3 | S4 | – | – |
| | 400-440V AC | T3 | T4 | – | – |
| | 480V AC | V3 | V4 | – | – |
| | 500-550V AC | W3 | W4 | – | – |
| With resistor unit | 110V DC | H7 | – | – | – |

## ■ Joy stick selector switches

| Handle | Terminal | Operating directions | Contact arrangement | Type: Manual return | Type: Spring return |
|---|---|---|---|---|---|
| Ball type without lock | Screw | ↕ | 1NO × 2 | **AR22A0N-A0A0B** | **AR22A5N-A0A0B** |
| | | | 1NO + 1NC × 2 | **AR22A0N-1010B** | **AR22A5N-1010B** |
| | | ↕↔ | 1NO × 4 | **AR22A0N-AAAAB** | **AR22A5N-AAAAB** |
| | | | 1NO + 1NC × 4 | **AR22A0N-1111B** | **AR22A5N-1111B** |
| | Solder/tab | ↕ | 1NO + 1NC × 2 | **AR22A0H-1010B** | **AR22A5H-1010B** |
| | | | 2NO + 2NC × 2 | **AR22A0H-2020B** | **AR22A5H-2020B** |
| | | ↕↔ | 1NO + 1NC × 4 | **AR22A0H-1111B** | **AR22A5H-1111B** |
| | | | 2NO + 2NC × 4 | **AR22A0H-2222B** | **AR22A5H-2222B** |
| AF97-49 | | | | | |
| Ball type with lock | Screw | ↕ | 1NO × 2 | **AR22A1N-A0A0B** | **AR22A6N-A0A0B** |
| | | | 1NO + 1NC × 2 | **AR22A1N-1010B** | **AR22A6N-1010B** |
| | | ↕↔ | 1NO × 4 | **AR22A1N-AAAAB** | **AR22A6N-AAAAB** |
| | | | 1NO + 1NC × 4 | **AR22A1N-1111B** | **AR22A6N-1111B** |
| | Solder/tab | ↕ | 1NO + 1NC × 2 | **AR22A1H-1010B** | **AR22A6H-1010B** |
| | | | 2NO + 2NC × 2 | **AR22A1H-2020B** | **AR22A6H-2020B** |
| | | ↕↔ | 1NO + 1NC × 4 | **AR22A1H-1111B** | **AR22A6H-1111B** |
| | | | 2NO + 2NC × 4 | **AR22A1H-2222B** | **AR22A6H-2222B** |
| AF97-45 | | | | | |
| Rubber cap type without lock | Screw | ↕ | 1NO × 2 | **AR22A2N-A0A0B** | **AR22A7N-A0A0B** |
| | | | 1NO + 1NC × 2 | **AR22A2N-1010B** | **AR22A7N-1010B** |
| | | ↕↔ | 1NO × 4 | **AR22A2N-AAAAB** | **AR22A7N-AAAAB** |
| | | | 1NO + 1NC × 4 | **AR22A2N-1111B** | **AR22A7N-1111B** |
| | Solder/tab | ↕ | 1NO + 1NC × 2 | **AR22A2H-1010B** | **AR22A7H-1010B** |
| | | | 2NO + 2NC × 2 | **AR22A2H-2020B** | **AR22A7H-2020B** |
| | | ↕↔ | 1NO + 1NC × 4 | **AR22A2H-1111B** | **AR22A7H-1111B** |
| | | | 2NO + 2NC × 4 | **AR22A2H-2222B** | **AR22A7H-2222B** |
| AF97-56 | | | | | |

### • Operating direction

- Directions other than those shown in the table above can be provided.
- For types AR22A□N-1 2 3 4 B, designate the contact arrangement codes for the necessary operating directions (1: Upper, 2: Right, 3: Lower, 4: Left). Designate "0" for unnecessary directions.




### • Contact arrangement

| Contact arrangement | | – | 1NO | 1NC | 1NO+1NC | 2NO | 2NC | 2NO+2NC |
|---|---|---|---|---|---|---|---|---|
| Manual return Spring return | Screw | 0 | A | B | 1 | D | E | – |
| | Solder/Tab | 0 | – | – | 1 | – | – | 2 |

- Spring/manual return are also available, contact FUJI.

## ■ Buzzers

| Sound | Description | Transformer | Operating voltage | Type |
|---|---|---|---|---|
| Electronic sound AF96-377 | • LED operation indicator (Red)<br>• Intermittent/continuous sound selection<br>• Sound level: 90dB (0.1m)<br>70dB (1m) | Without | 6V AC<br>6V DC<br>12 to 24V AC/DC<br>35 to 48V AC/DC | **DR22B5-AB**<br>**DR22B5-6B**<br>**DR22B5-EB**<br>**DR22B5-FB** |
| | | With | 100 to 110V AC<br>200 to 220V AC | **DR22B5-HB**<br>**DR22B5-MB** |
| | | With resistor unit | 100 to 110V DC | **DR22B5-1B** |
| Magnetic sound AF96-376 | • Sound volume adjustment<br>• Sound level: 80 to 90dB (0.1m)<br>60 to 70dB (1m) | Without | 24V AC/DC | **DR22B3-EB** |
| | | With | 100 to 110V AC<br>200 to 220V AC | **DR22B3-HB**<br>**DR22B3-MB** |
| Electronic sound (IP54) AF96-244 | • Intermittent/continuous sound selection<br>• Sound level: 80dB (0.1m)<br>60dB (1m) | Without | 6V AC<br>6V DC<br>12 to 24V AC/DC<br>35 to 48V AC/DC | **DR22B8-AB**<br>**DR22B8-6B**<br>**DR22B8-EB**<br>**DR22B8-FB** |
| | | With | 100 to 110V AC<br>200 to 220V AC | **DR22B8-HB**<br>**DR22B8-MB** |
| | | With resistor unit | 100 to 110V DC | **DR22B8-1B** |

Notes: • Intermittent/continuous sound selection (DR22B5, B8)
See the "Short-circuit terminal" in the dimensions diagram on the 49 page, and select as follows:
• Short-circuit terminal mounted → Intermittent sound
• Short-circuit terminal not mounted → Continuous sound

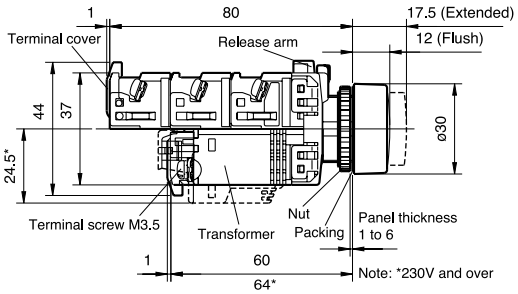
• Sound volume adjustment (DR22B3)
Use a flat-bladed screwdriver with a narrow tip to gently turn "Control knob" shown in the dimensions diagram on the 49 page, as follows.
• Clockwise → Increase sound pressure
• Counterclockwise → Decrease sound pressure

# AR22 and DR22
# Dimensions

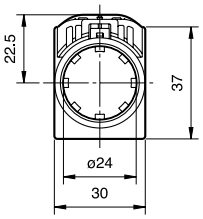
## ■ Dimensions, mm
### •Illuminated pushbutton switches

### Flush/Extended

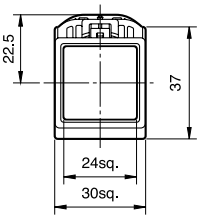
With transformer



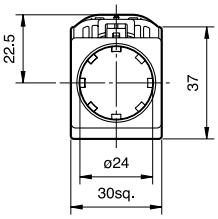

AR22F0L, F5L
AR22E0L, E5L



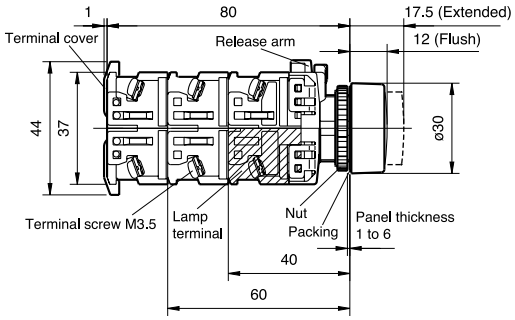

AR22F0M, F5M
AR22E0M, E5M



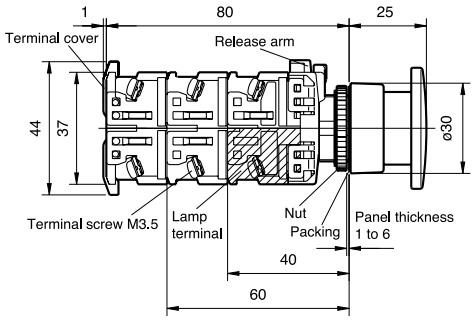

AR22F0P, F5P
AR22E0P, E5P



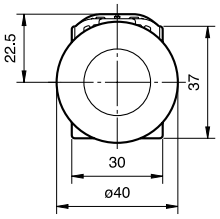

Without transformer



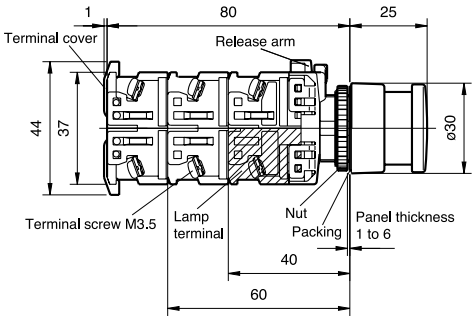

**Mushroom** (40mm dia.)



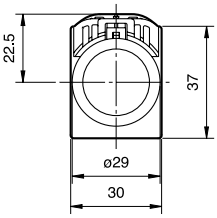

AR22M0L, M5L



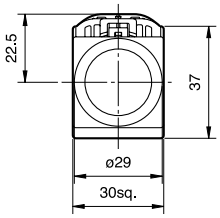

**Mushroom** (29mm dia.)



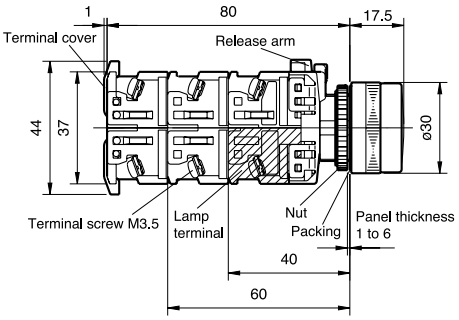

AR22M4L, M9L



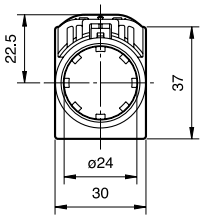

AR22M4P



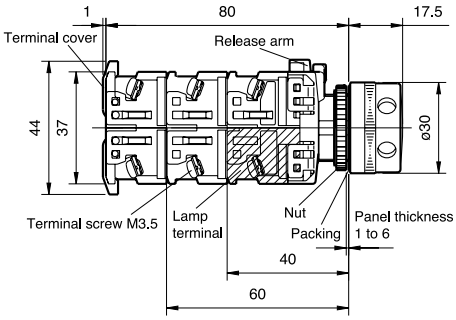

**Extended with full guard**



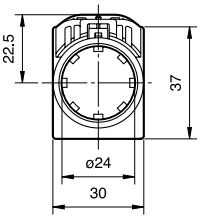

AR22G4L, G9L
AR22G1L, G6L



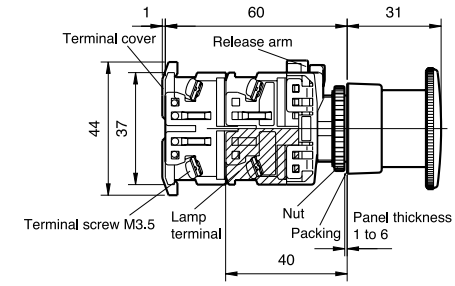

**Extended with full guard** (with openings)



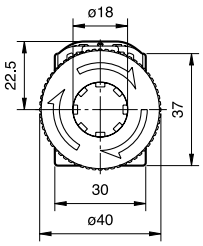

AR22G2L, G7L




**Push-lock, turn-reset**



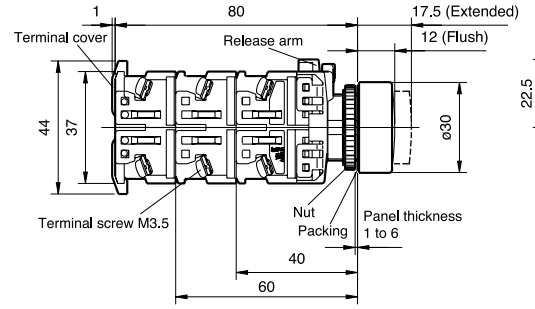

AR22V5L



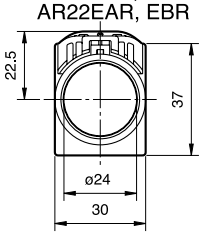
■ **Dimensions, mm**

•**Pushbutton switches**

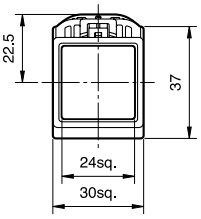
**Flush/Extended**



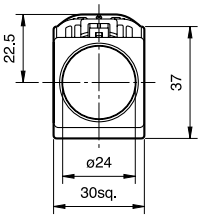

AR22F0R, F5R
AR22E0R, E5R
AR22FAR, FBR
AR22EAR, EBR



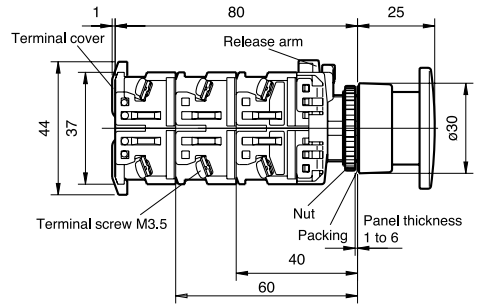

AR22F0S, F5S
AR22E0S, E5S



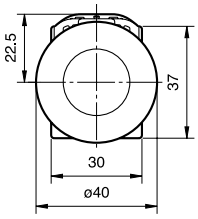

AR22F0Y, F5Y
AR22E0Y, E5Y



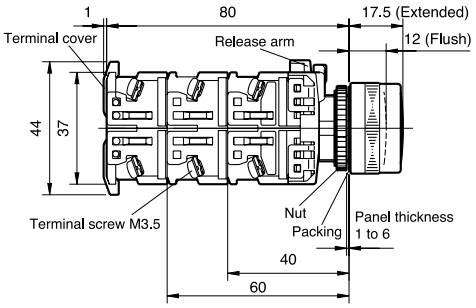

**Mushroom** (40mm dia.)



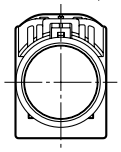

AR22M0R, M5R



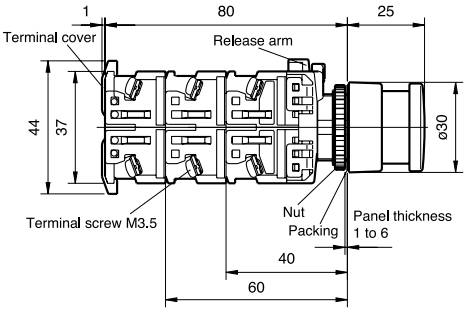

**Flush/Extended with full guard**



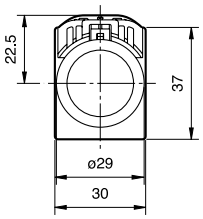

AR22G3R, G8R
AR22G2R, G7R



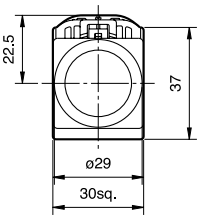
**Mushroom** (29mm dia.)



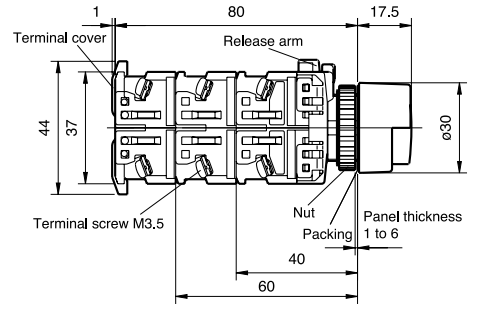

AR22M4R, M9R



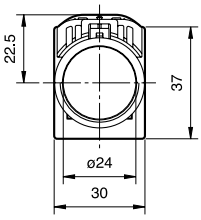

AR22M4Y



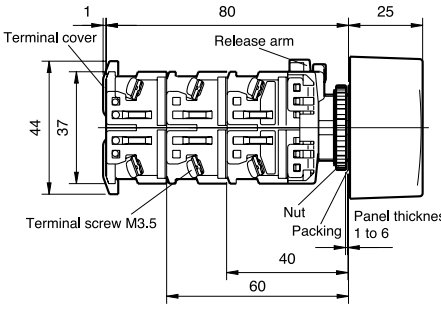

**Extended with half guard**



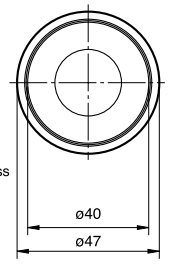

AR22G0R, G5R



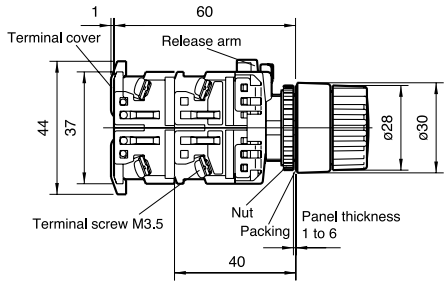

**Mushroom with full guard** (40mm dia.)



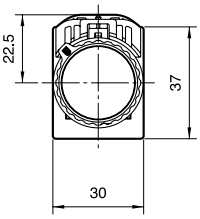

AR22M3R, M8R



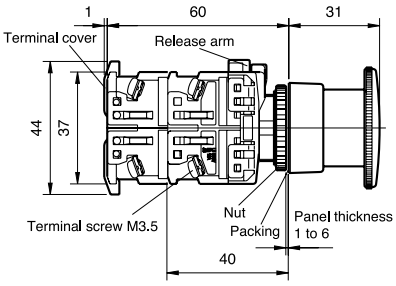

**Pushbutton with selector ring**



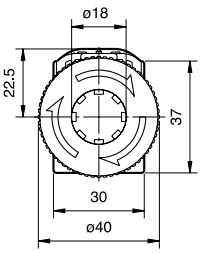

AR22S1R, S2R
AR22S3R, S6R




**Push-lock, turn-reset**



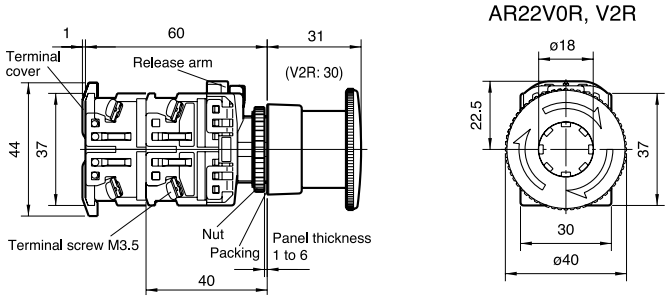

AR22V5R



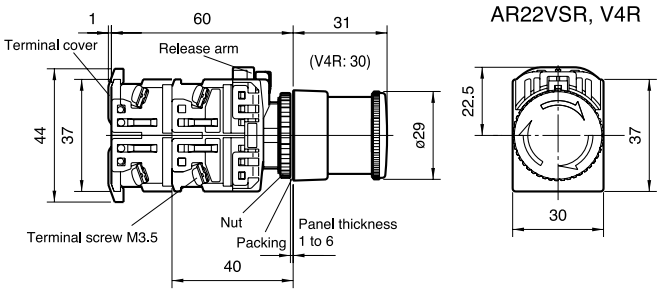
# AR22 and DR22
# Dimensions

## ■ Dimensions, mm
### •Emergency stop pushbutton switches

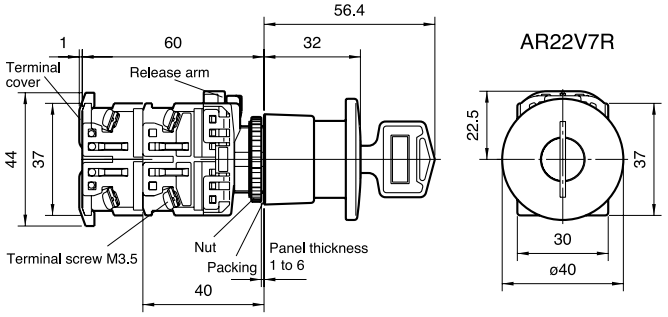
**Push-lock, turn-reset** (40mm dia.)



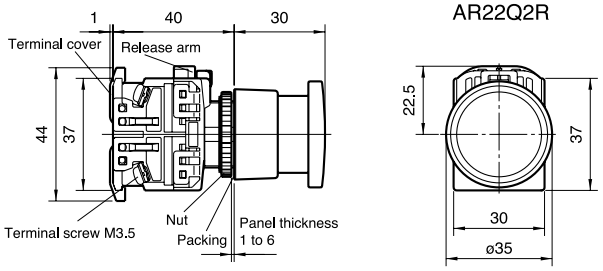

**Push-lock, turn-reset** (29mm dia.)



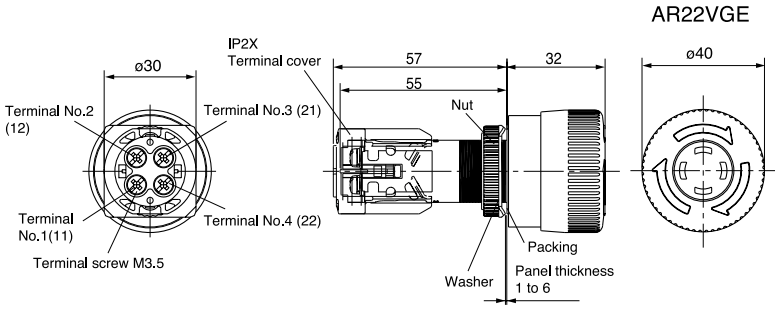

**Key release push-lock, turn-reset** (40mm dia.)



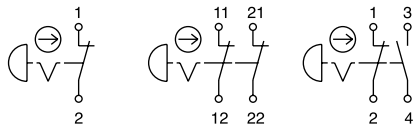

**Push-lock, pull-reset** (35mm dia.)




**Unibody push-lock, turn-reset** (40mm dia.)




Wiring diagrams



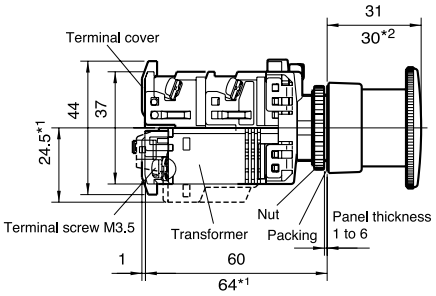

Note: Terminal No. shown in ( ) are for contact arrangement 2NC.

## ■ Dimensions, mm

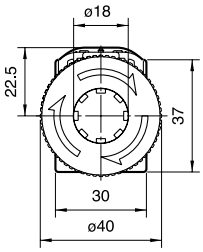
### •Emergency stop illuminated pushbutton switches

**Push-lock, turn-reset** (40mm dia.)

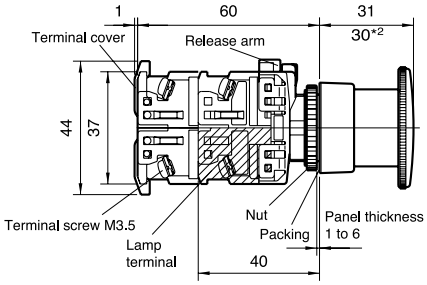
With transformer




AR22V0L, V2L
AR22VDL, VAL



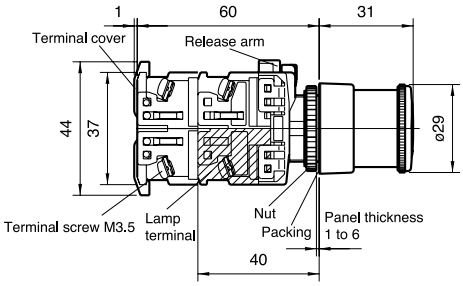

Without transformer



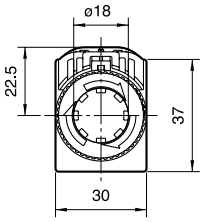

Note: *1 230V and over
*2 AR22V2L and VAL types only

**Push-lock, turn-reset** (29mm dia.)

Without transformer

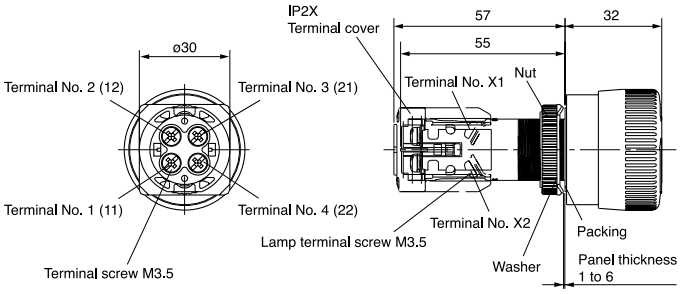



AR22VSL

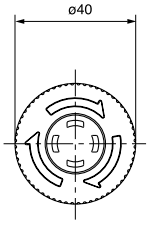



**Unibody push-lock, turn-reset** (40mm dia.)

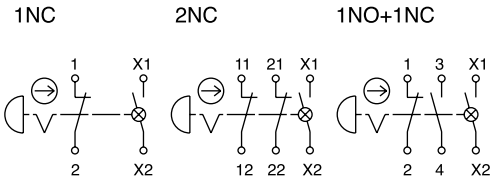
Without transformer




AR22VGF




Wiring diagrams

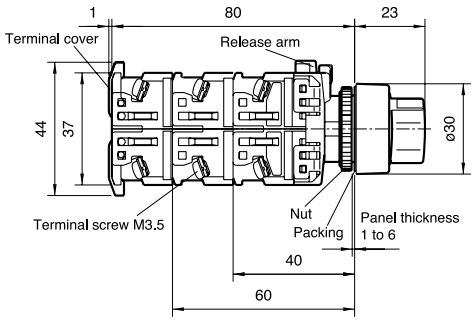



Note: Terminal No. shown in ( ) are for contact arrangement 2NC.

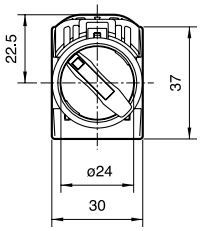
# AR22 and DR22
# Dimensions

## ■ Dimensions, mm
### •Selector switches

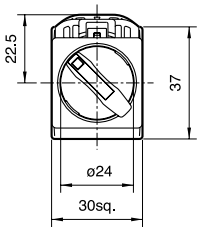
### Knob



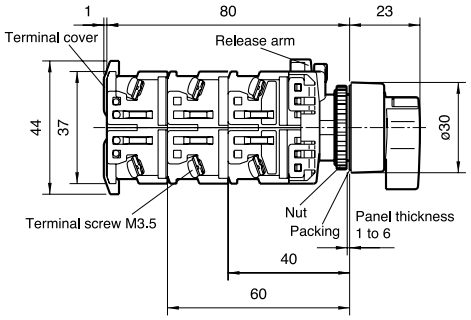

AR22PR, PCR



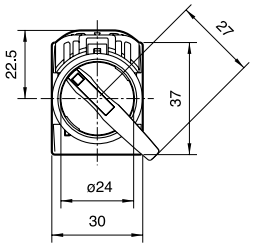

AR22PY, PCY



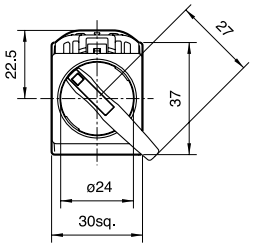

### Lever



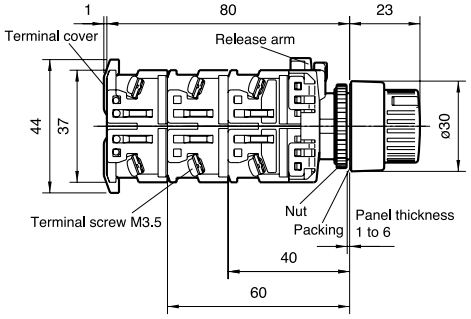

AR22WR, WCR



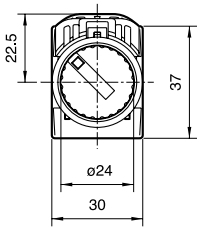

AR22WY, WCY



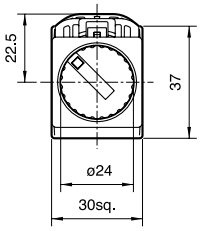

### Cylindrical knob



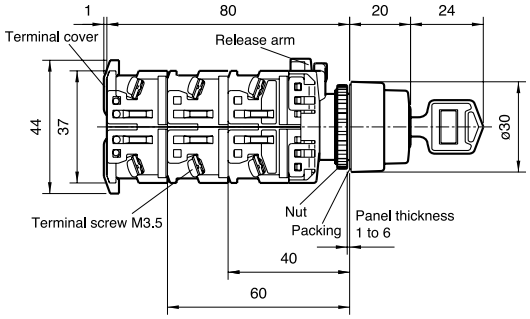

AR22RR, RCR



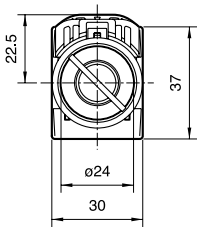

AR22RY, RCY



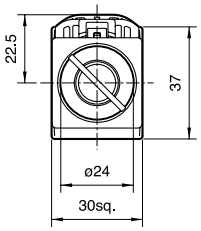

### Key




AR22JR, JCR
AR22JAR



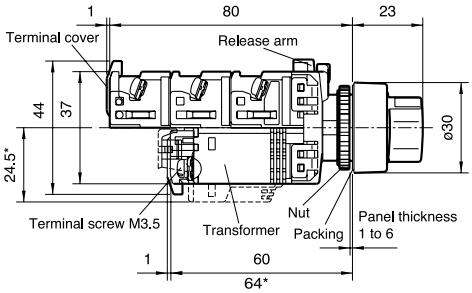

AR22JY, JCY

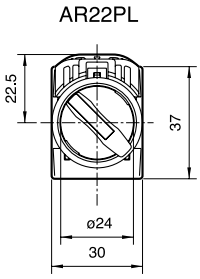


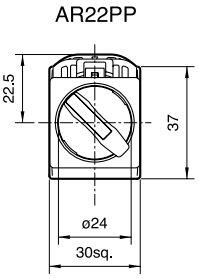
## ■ Dimensions, mm

### •Illuminated selector switches

With transformer

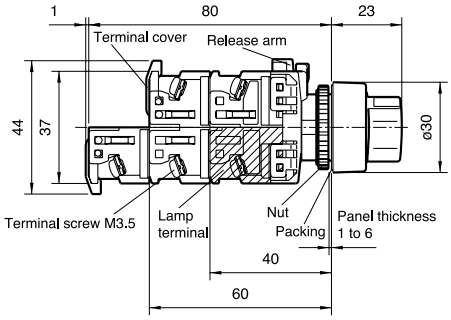



Note: * 230V and over

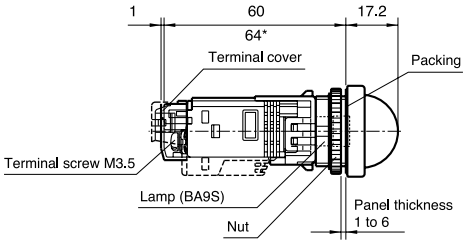
Without transformer



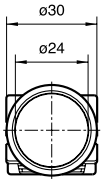

### •Pilot lights

#### Dome

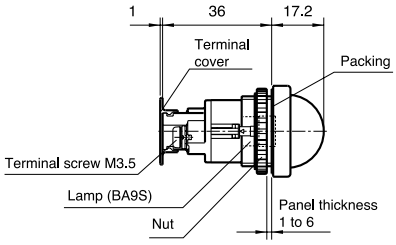
With transformer, with resistor unit



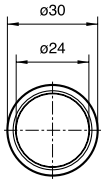

DR22D0L



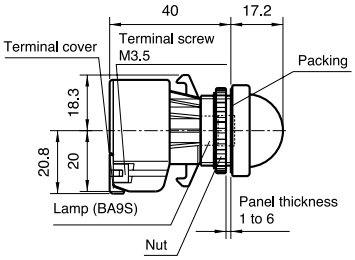

Without transformer



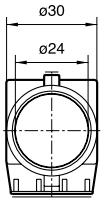

DR22D0L



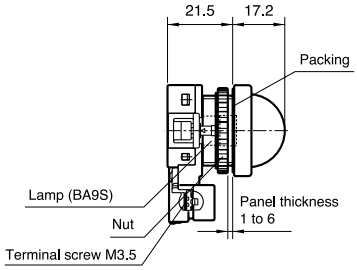

Short body/with transformer



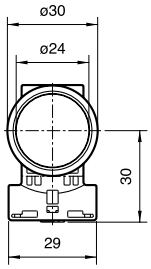

DR22D0L




Short body/without transformer




DR22D0L



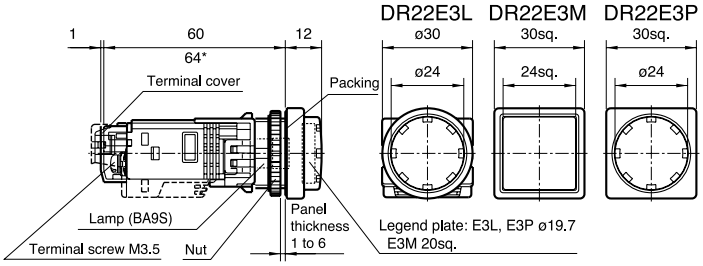

Note: * Except for the types 110V AC, 127V AC and 220V AC.

# AR22 and DR22
# Dimensions

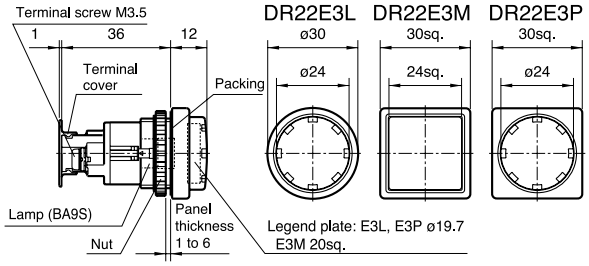
## ■ Dimensions, mm
### •Pilot lights

**Extended**

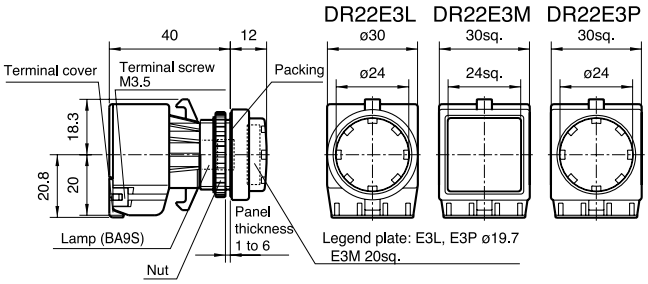
With transformer, with resistor unit



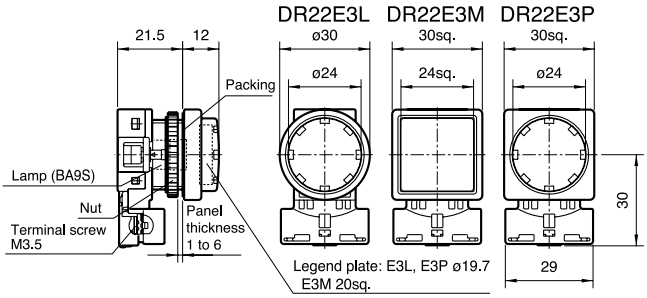

Without transformer




Short body/with transformer



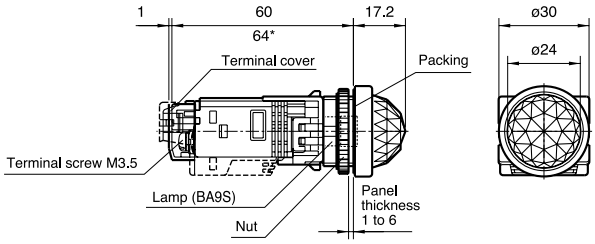

Short body/without transformer



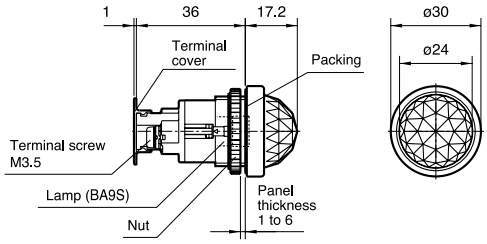

Note: * Except for the types 110V AC, 127V AC and 220V AC.

**Faceted**

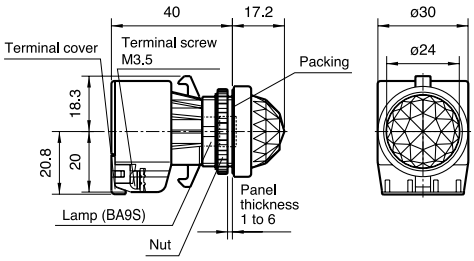
With transformer, with resistor unit



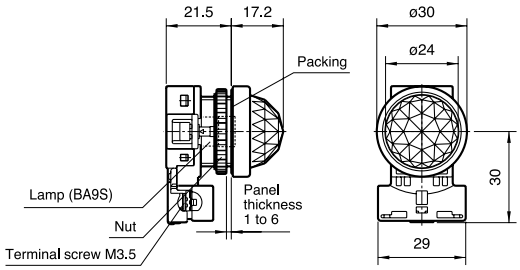

Without transformer




Short body/with transformer




Short body/without transformer

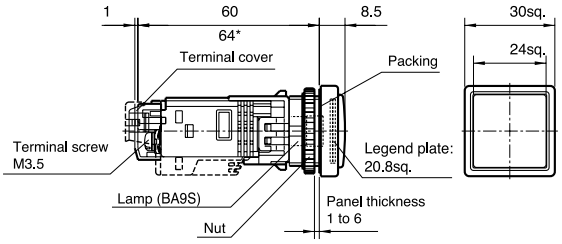



Note: * Except for the types 110V AC, 127V AC and 220V AC.

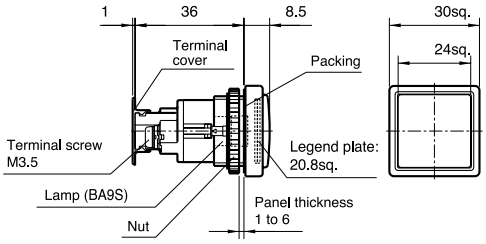
## ■ Dimensions, mm
### •Pilot lights

### Flush

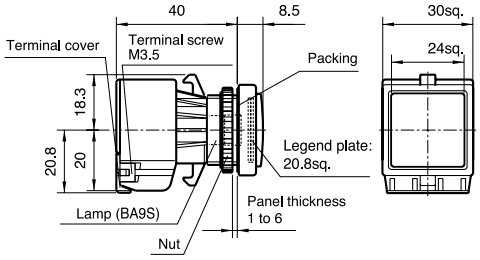
With transformer, with resistor unit DR22F3M, F4M



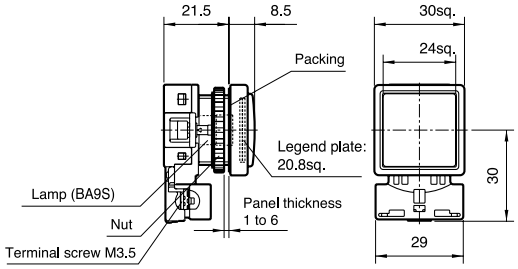

Without transformer DR22F3M, F4M




Short body/with transformer DR22F3M, F4M



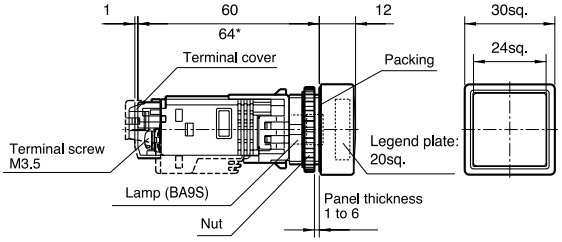

Short body/without transformer DR22F3M, F4M



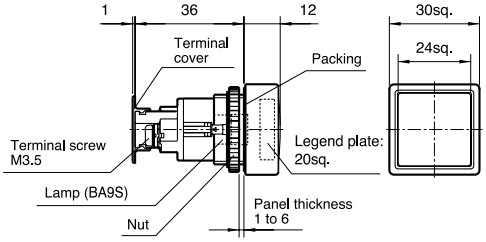

Note: * Except for the types 110V AC, 127V AC and 220V AC.

### Flush (12mm high frame)

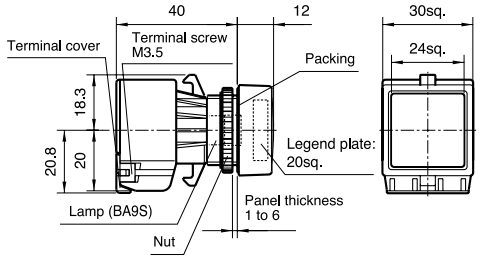
With transformer, with resistor unit DR22F5M



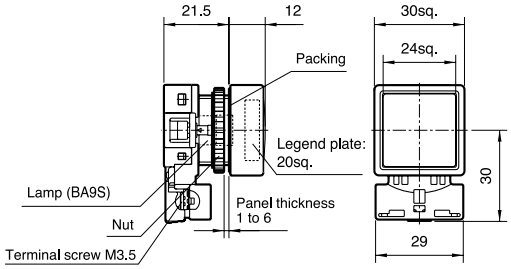

Without transformer DR22F5M




Short body/with transformer DR22F5M




Short body/without transformer DR22F5M




Note: * Except for the types 110V AC, 127V AC and 220V AC.

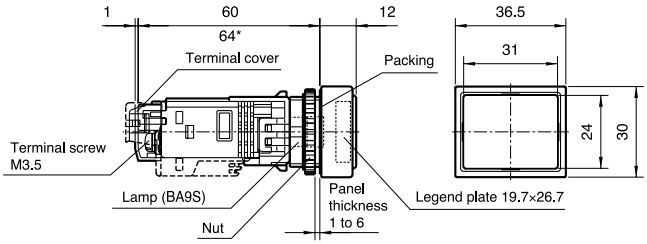
# AR22 and DR22
# Dimensions

## ■ Dimensions, mm

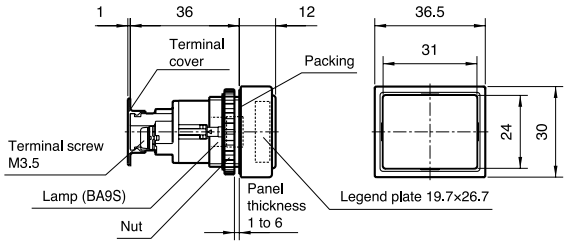
### •Pilot lights

#### Flush rectangular

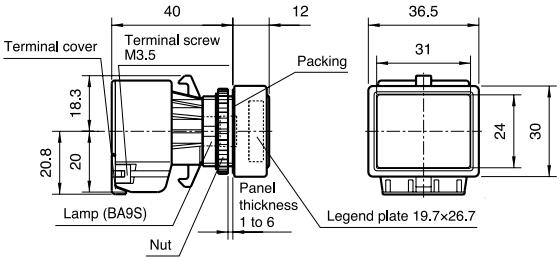
With transformer, with resistor unit DR22E3N



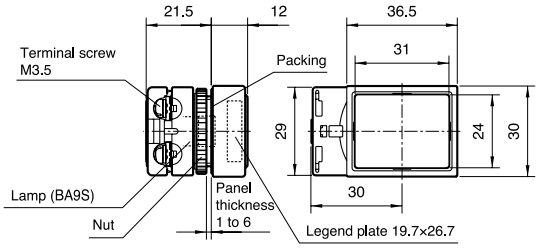

Without transformer DR22E3N




Short body/with transformer DR22E3N




Short body/without transformer DR22E3N

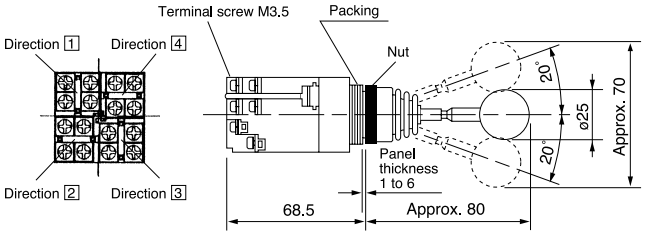


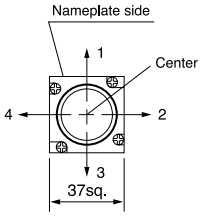

Note: * Except for the types 110V AC, 127V AC and 220V AC.

### •Joy stick selector switches

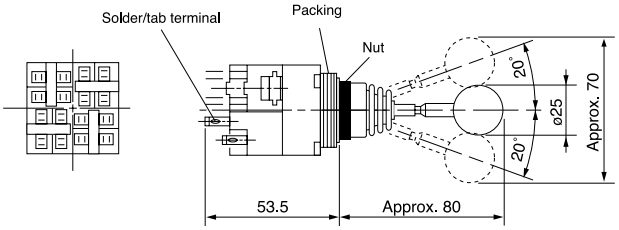
#### Ball type without lock

Screw terminal AR22A0N, A5N



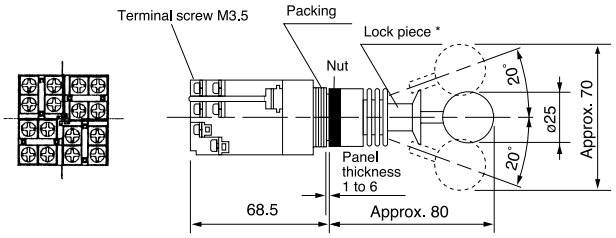

Solder/tab terminal AR22A0H, A5H



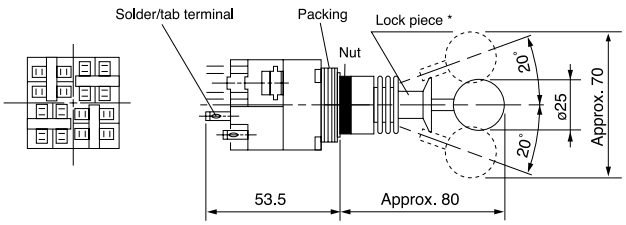

Notes * The contact arrangement is operable in the designated direction by pulling the lock piece in the central position with the fingers. The lock piece will return automatically and locks when the lock piece is released in the central position.
The lock piece locks in the central position only.

#### Ball type with lock

Screw terminal AR22A1N, A6N




Solder/tab terminal AR22A1H, A6H

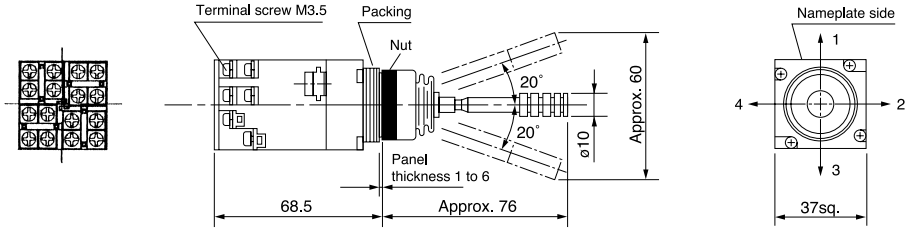


## ■ Dimensions, mm

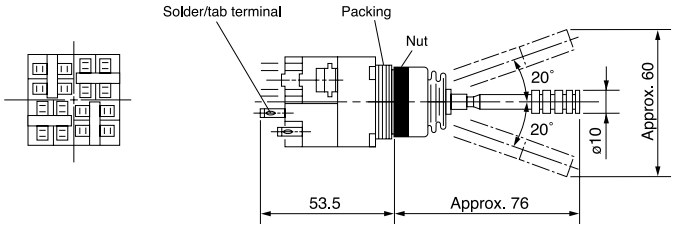
### •Joy stick selector switches

**Rubber cap type without lock**

Screw terminal AR22A2N, A7N



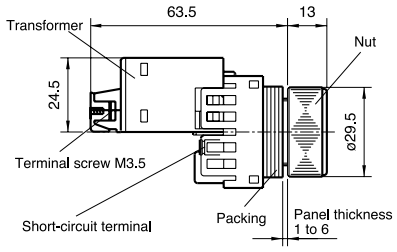

Solder/tab terminal AR22A2H, A7H



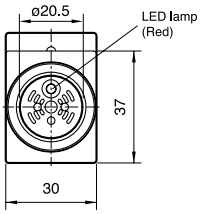

### •Buzzers

**Electronic sound**

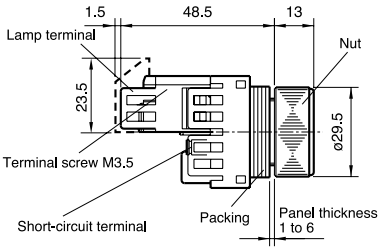
With transformer



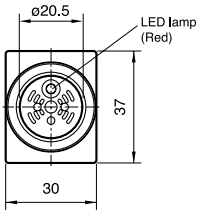

DR22B5




Without transformer

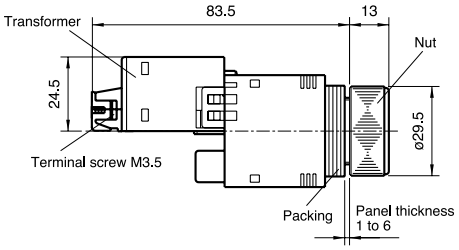



DR22B5

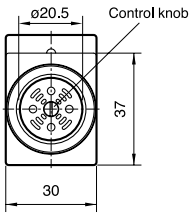



**Magnetic sound**

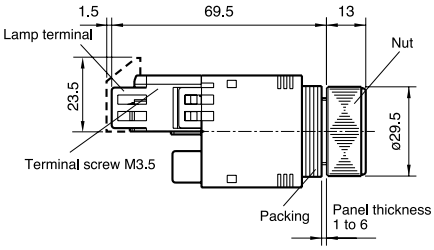
With transformer



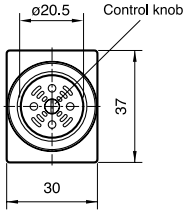

DR22B3




Without transformer

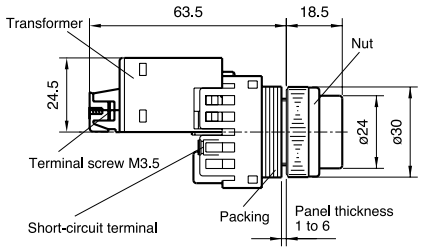



DR22B3

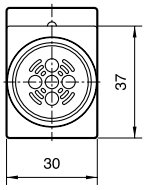



**Electronic sound (IP54)**

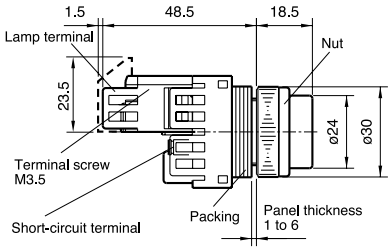
With transformer



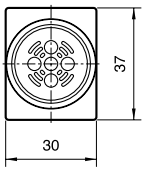

DR22B8




Without transformer




DR22B8



## Notes on use

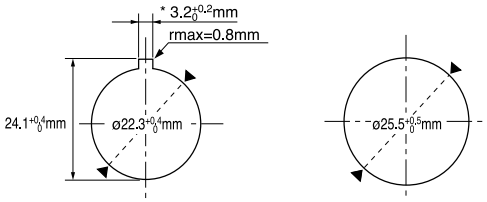
### ■ Fit two sizes of panel cutout holes

* The unique nut with a step allows switch to be mounted in either 22.3mm- or 25.5mm-dia. holes as shown in Fig. 1 without any extra adapter.

**Fig. 1 Panel cutout**

The switch mounted as a ϕ22mm diameter unit.

The switch mounted as a ϕ25mm diameter unit.

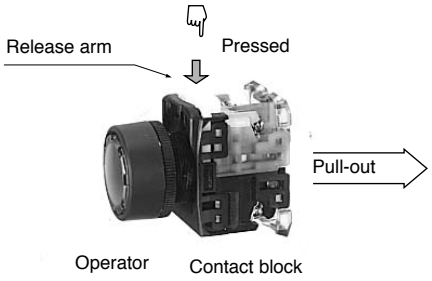



Note: * If key-washer or legend plate are not used, 3.2mm-wide location holes need not be cutout.

### ■ Detaching contact block from the operator

While keeping the white release arm pressed with one finger, pull-out the contact block in the direction by the arrow.

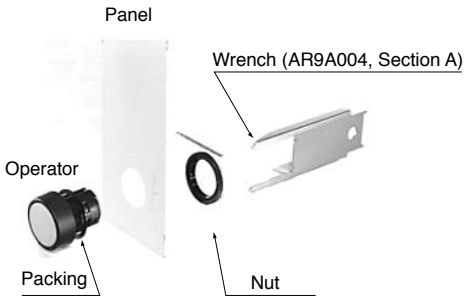
**Fig. 2 Detaching contact block from the operator**




### ■ Mounting operator to panel

① In a 22.3mm-dia. panel cutout hole
Insert the operator into the cutout hole from the panel front as shown in the Fig. 3.
Then, fit section "A" of the AR9A004 wrench from behind the panel and secure the operator with nut. *(See page 106 for the wrench)*

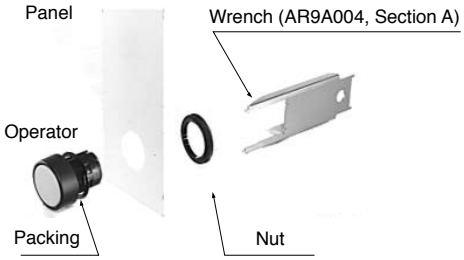
**Fig. 3 Mounting an operator in a 22.3mm-dia. hole**



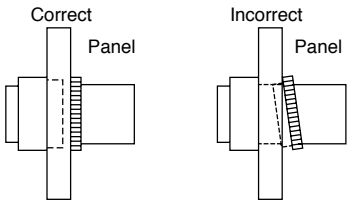

Note: Recommended tightening torque is from 1 to 1.5N•m

② In a 25.5mm-dia. panel cutout hole
As shown in Fig. 4, with the nut step-out side oriented to the panel, use the wrench to tighten the nut and secure the operator.

**Fig. 4 Mounting a operator in a 25.5mm-dia. hole**

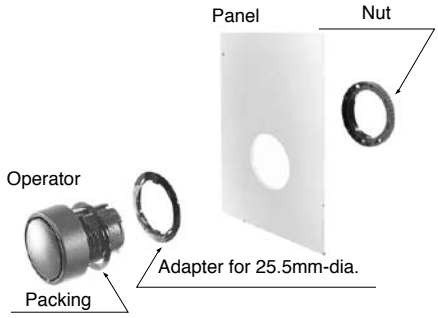



Note: 1. Recommended tightening torque is from 1 to 1.5N•m
2. Ensure that the step-out portion of the nut is correctly fitted in the cutout hole.




For easier mounting in the 25.5mm-dia. hole, the AR9Y718 adapter is also available separately.

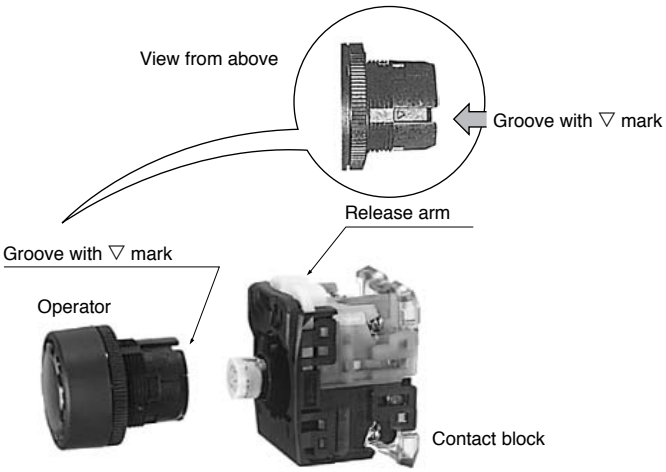
**Fig. 5 Mounting with an adapter and locking nut**




### ■ Mounting contact block to the operator

As shown in Fig. 6, align the protruding part of the contact block release arm with the operator groove at the ▽ mark. Then, insert the contact block into the operator until it clicks.

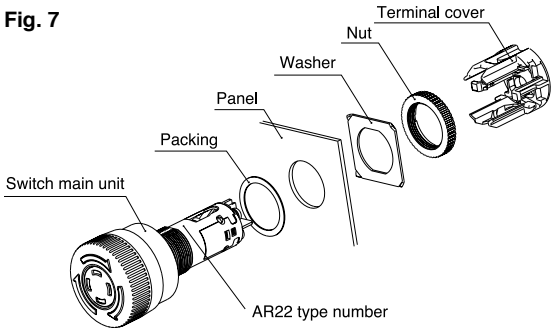
**Fig. 6 Mounting the contact block to the operator**



### ■ VG type panel mounting

As shown in the illustration, remove the live section cover, nut, and washer, and insert the main unit into a panel which has been cut from the front side of the panel. Place the type number AR22 facing upward, and secure the main unit with the nut using a wrench AHX701. The appropriate tightening torque is 1 to 1.5N•m.

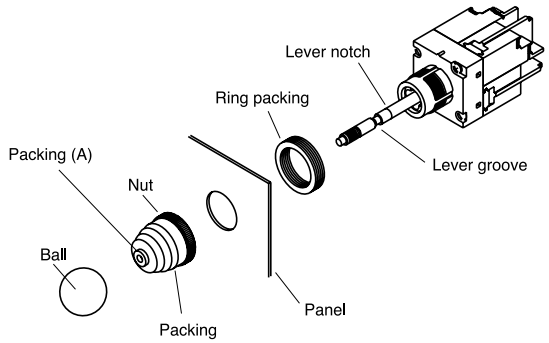
**Fig. 7**




### ■ Joy stick selector switch mounting on panel

(1) Twist and remove the ball from the operator.
(2) Loosen the nut and remove the switch if the switch is provided with a lock.
(3) If no locking nut is provided, loosen the nut and remove the switch after the packing part (A) shown in the illustration is stretched to the lever groove.
(4) Mount the switch in the order opposite to removal. Set the packing to the notch on the lever as a reference. Do not separate the nut from the packing.
(5) Use a torque wrench AR9A006 to tighten the nut from the front of the panel.
Note: Recommended tightening a torque is 1 to 1.5N•m.

**Fig. 8**




### ■ Buzzer mounting on panel

(1) Remove the nut, and insert the main unit into the mounting hole from the back of the panel.
(2) Tighten the buzzer using a wrench AR9A006 from the front side of the panel.
Note:
- Recommended tightening torque is 1 to 1.5N•m.
- Electronic sound (IP54) type has a all-in-one unit with nut and cap.

### ■ Applicable panel thickness

The AR22/DR22 series switches are mountable to panels with thickness as given in Table below.

| Mounting condition | | | Applicable panel thickness (mm) |
|---|---|---|---|
| Without accessories | | | 1 to 6 |
| With accesories | Protective cover, water-proof cap, legend plate | | 1 to 4 |
| | Key washer | without hole | 1 to 4 |
| | | with hole | 1 to 5 |
| | Adapter for a 25.5mm-dia. hole | | 1 to 5.5 |

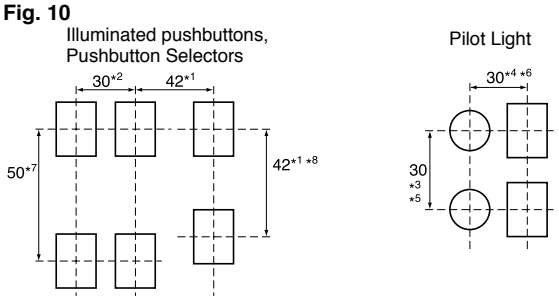
• When using a joy stick selector switch and buzzer
The applicable panel thickness is 1 to 6mm. Five 1.3mm packings (single-piece type) are included as standard equipment. Insert as many as required depending on the panel thickness, using the following table as a guide. When using a key washer, legend plate, or adapter, their thickness will have to be added to the values in the guide.

| Panel thickness (mm) (plus key washer, legend plate) | Number of packings (reference) |
|---|---|
| 1.0 to 1.6 | 5 |
| 1.6 to 2.8 | 4 |
| 2.8 to 3.8 | 3 |
| 3.8 to 4.8 | 2 |
| 4.8 to 6.0 | 1 |

## ■ Minimum mounting space, mm

(1) Minimum mounting space

**Fig. 10**

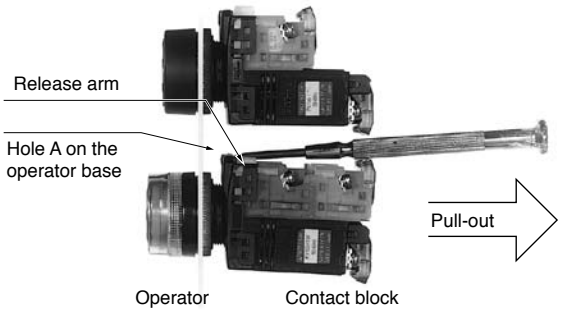



Notes:
- *1 AR22M0□, M5□, V5□, V0□, V2□, V7R, VG□: 42mm
  AR22M3R, M8R: 49mm
  AR22Q2R, WR, W0R, WY, WCY: 40mm
- *2 When mounting contact blocks at 30mm pitch, use it circuit of 380V or less.
- *3 Short body with transformer types: 50mm.
- *4 Rectangular types: 36.5mm (except for short body without transformer types).
- *5 Short body without transformer types: 60mm.
- *6 Rectangular short body without transformer types: 60mm.
- *7 This dimension applies when transformer units or contact blocks face each other.
- *8 This dimension applies when transformer unit or contact block is mounted on only one side.

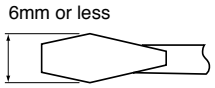
When mounting operators on a panel, orient all ▽ marks on the operator upwards.
(The operator release arms are oriented upwards.) This aligns the terminals of all contact blocks, thus making wiring easy.

(2) Detaching contact blocks from operators
As shown in Fig. 9, insert a flat-head screw driver into the groove of the white release arm on the contact block. Then, while inserting the driver in hole A of the operator base, lower the driver grip and take out the contact block.

**Fig. 11**



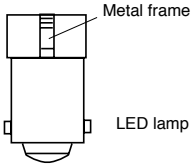

Note: Use a flat head screwdriver as shown at the right.




## ■ Products with blue and green LEDs

The LED devices on products with high-brightness (blue and green) LEDs are very sensitive to static electricity. When replacing LED lamps do not allow static electricity to come into direct contact with the metal frame on the upper side of the LED lamp. The LED device may be damaged if this part is subjected to static electricity. When installing or removing an LED lamp, it is recommended that you use the lamp changer (AHX790).

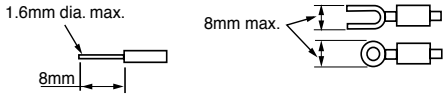
**Fig. 12**




## ■ Wiring

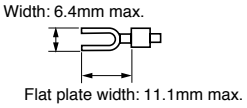
(1) The terminal screws are M3.5 pan head screws. Solid wires, stranded wires, or crimp terminals can be connected.

**Fig. 13**




(2) Two crimp terminals can be used by putting one of them on top of the other. If fork-type crimp terminals are used in the horizontal direction, however, use ones as shown in the figure below. (i.e., Toei Tanshi's F2-3.5S or an equivalent).

**Fig. 14**



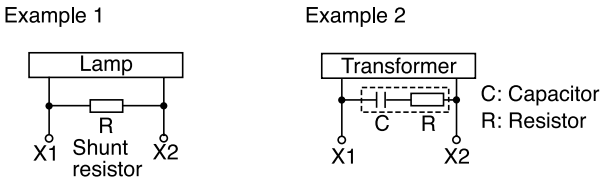

(3) The terminal washers are a self-lifting type.
(4) Tighten the terminal screws to a tightening torque of 0.8 to 1N•m.
(5) Keep the terminals free of external force while wiring or after wiring, or operational failures may result.
(6) Do not use screws other than the provided terminal screws.

Notes:
- If solid wires are connected to the lamp terminals in the horizontal direction (on the side), be sure to insert the solid wires into the square washers.
- Terminal layout., *see page 54*
- See page 53 for the wiring of the joy stick selector switch and VG type.

## ■ LED Indicator

(1) LED Lamp Malfunctioning
The LED lamp is lit by a very small level of current (approximately 0.01mA). Therefore, it may be erroneously lit by a leaking current from the surge absorption circuit or semiconductor circuit or due to stray capacitance between cables. In that case, provide a countermeasure (e.g., connect a resistor in parallel with the LED lamp).
• Countermeasure for Malfunctioning
The LED lamp malfunctions can be prevented by connecting a shunt resistor (R) or CR elements (a capacitor and resistor) in parallel with the LED lamp terminal. The resistance and CR values vary depending on the model and the operating conditions.

**Fig. 15**




Example 1:
- 24V DC
  R: 10kΩ (0.5W)
- 24V AC
  R: 2kΩ (2W)

Example 2:
- 100V AC
  C: 0.33μF (250V AC)
  R: 120Ω (0.25W)
- 220V AC
  C: 0.1μF (250V AC)
  R: 120Ω (0.25W)

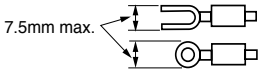
(2) Incoming surge
High luminance LED products use an element sensitive to static electricity. They may not be lit by an abnormal voltage like surge. Please note it.

### ■ Joy stick selector switch

• Screw terminal wiring

(1) The terminals use M3.5 pan head screws. Use crimp terminals to wire the terminals.

**Fig. 16**




(2) The terminal washers are a self-lifting type.

(3) Tighten the terminal screws to a tightening torque of 0.8 to 1.0N•m. Keep the terminals free of external force during and after wiring, or operational failures may result.

• Solder (tab terminal) wiring

(1) Pay attention to the following items when soldering the terminals.
Use a soldering iron with a power consumption of 30W.
Use resin-core solder.
If a 30W soldering iron is used, finish soldering the terminals within five seconds. If a 20W soldering iron is used, finish soldering the terminals within 10 seconds.
Make sure that the soldering iron tip length is at least 20mm long. Do not apply external force to the terminals.
Because lead-free solder's melting point is slightly high, soldering work may be difficult. Use a soldering iron whose tip is rather large or whose calorie is rather high.

(2) When using adjacent terminals, use insulation tubes to prevent the terminals from short-circuiting. Utmost attention must be paid to the solder terminals if especially thick wires are used or if a large quantity of solder is used.

(3) Connectable wires
Solid wire: 2 wires, 0.8mm dia. max.
Stranded wire: 1 wire, 0.75mm$^2$ max.

(4) Use the 110 (2.8mm) series receptacle for the tab terminals.

(5) Wire the tab terminals with the contact unit connected to the main unit.

• Operation

Operation shall be made after the joy stick operation lever is surely returned to the center position. Do not apply excessive force to the operation lever. The maximum permissible force is 100N.

• Use of contact blocks

If NO and NC contacts are used in the same contact block, check that there is no difference in potential. Do not connect different type of power source different in type.

### ■ Buzzer

• Noise

If the application circuit is likely to generate excessively strong noise, connect a surge absorber (e.g., FUJI's ENC390D, provided that the switch is a 24V type) in parallel with the buzzer.

• Place of Use

The buzzer does not have a drip-proof construction. Do not use the buzzer in places where oil or water is sprayed or where dust accumulates. If the buzzer is a splash-proof type, it will resist sprays of water.

• Do not use the buzzer in places that are subject to an excessive amount of corrosive gas.

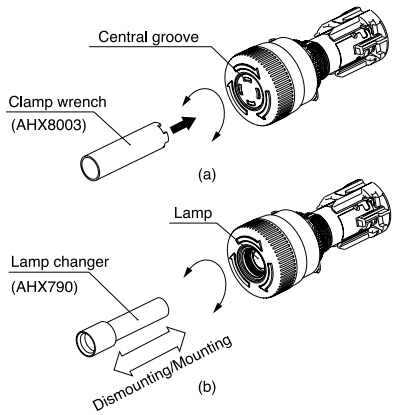
• Note that the buzzer is likely to sound erroneously due to leakage current or the like.

### ■ AR22VG type

• As shown in Fig. 17 (a), engage the tip of the wrench (AHX8003) with the groove in the center to mount or remove the locking unit. The recommended tightening torque is 0.6 to 1N•m.

• As shown in Fig. 17 (b), insert the lamp changer (AHX790) and press the lamp changer to mount or remove the lamp. Turn the lamp changer clockwise when mounting the lamp and counterclockwise when removing it.

**Fig. 17**

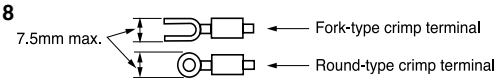



Note: The lamp and neon lamp are special models for the AR22VGF. Use only these special lamps for replacement.

• Wiring

The terminals use M3.5 pan head screws. Use crimp terminals for wiring and cover the crimp terminals with insulation tubes.

**Fig. 18**




• The terminal washers are a self-lifting type.

• Tighten the terminal screws to a torque of 0.8 to 1N•m. Keep the terminals free of external force during and after wiring, or operational failures may result.

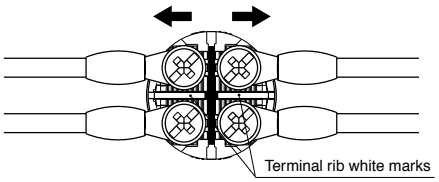
• Wiring precautions

(1) Use of round-type crimp terminal

• Remove the live section cover, and half-tighten to the point parallel with the terminal rib white marks in the direction of the arrows as shown in the illustration below.

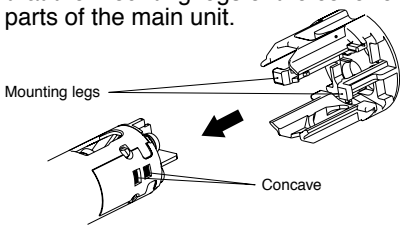
• Mount the live section cover and tighten the terminals securely.

**Fig. 19**




As shown in the illustration below, mount the live section cover so that the mounting legs of the cover engage with the concave parts of the main unit.

**Fig. 20**




(2) If fork-type crimp terminals are used, wiring will be possible without removing the live section cover.

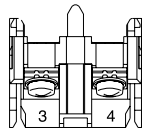
## ■ Operation

- Do not use a hitting or bouncing action to operate the button, or the switch may break. Always operate the switch by hand. Do not pull mushroom head pushbuttons or alternate buttons other than the Q2.
- Do not rotate the selector ring type while the button is pressed, or the mechanism may break.
- The control type incorporates make-before-break contacts. Prepare a protection circuit for the application.
- The dial of the selector switch rotates with a light force. Do not apply force in excess of 1N•m. Please do not pull out or insert the key forcibly.
- To release the lock of the push-lock type, rotate the button clockwise as shown by the arrow. Do not pull the button, or the latch may break and the lock may fail to work.
- Do not lock the emergency stop pushbutton switch and emergency stop illuminated pushbutton switch in use. Push and lock the switch in case of an emergency only.

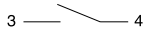
## ■ Terminal layout

**Fig. 21**

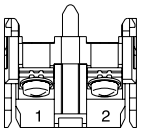
NO contact (AR9B290)
Blue



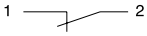

Terminal No.3, 4



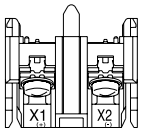

NC contact (AR9B291)
Red




Terminal No.1, 2

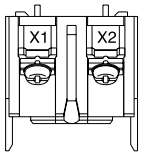



Lamp terminal (AR9B292)
Black



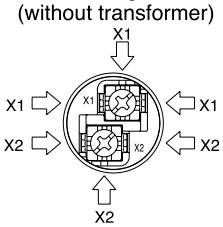

Terminal No.X1 (+), X2 (−)*

Lamp terminal (For buzzer)
(AHX291L) Brown



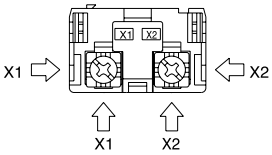

Terminal No.X1 (+), X2 (−)*

Pilot light
(without transformer)



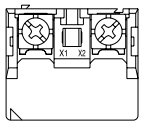

Terminal No.X1 (+), X2 (−)*

Transformer (AR9T511)
(220V or less)



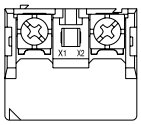

Terminal No.X1, X2

Transformer (AR9T511)
(230V or more)
Transformer (AHX511)
(For buzzer)



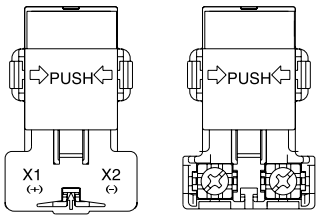

Terminal No.X1, X2

Resistor unit (AR9T519-H)
Voltage stabilizing unit
(AR9T001-E)
Flicker unit (AR9T002)



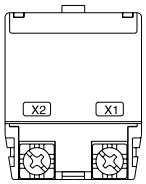

Terminal No.X1 (−), X2 (+)*

Pilot light
(short-body without transformer)




Terminal No.X1 (+), X2 (−)*

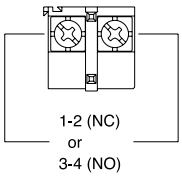
Pilot light
(short-body with transformer)




Terminal No.X1, X2

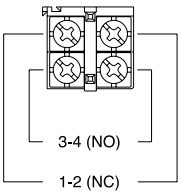
Note: * The positive and negative terminals are used for DC applications where the order of polarity is required.

Joy stick selector switch
(screw)
1NO or 1NC



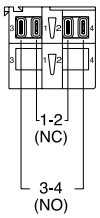

Terminal No. 1-2 or 3-4

Joy stick selector switch
(screw)
1NO + 1NC



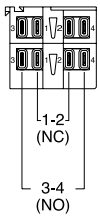

Terminal No. 1-2, 3-4

Joy stick selector switch
(solder/tab)
1NO + 1NC




Terminal No. 1-2, 3-4

Joy stick selector switch
(solder/tab)
2NO + 2NC




Terminal No. 1-2, 3-4

The full range of the contact blocks and transformer units suitable for the AR22 and DR22 series may also be fitted to the AR30 and DR30 series.

## ■ Features

### Quick-replacement contact blocks and transformer units

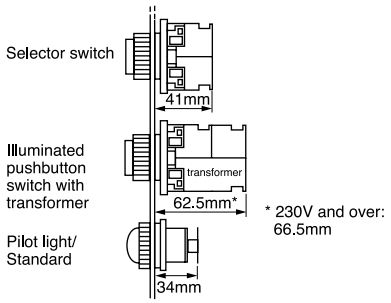
The snap-on construction makes replacement and addition of contact blocks and transformer units very simple and straightforward.

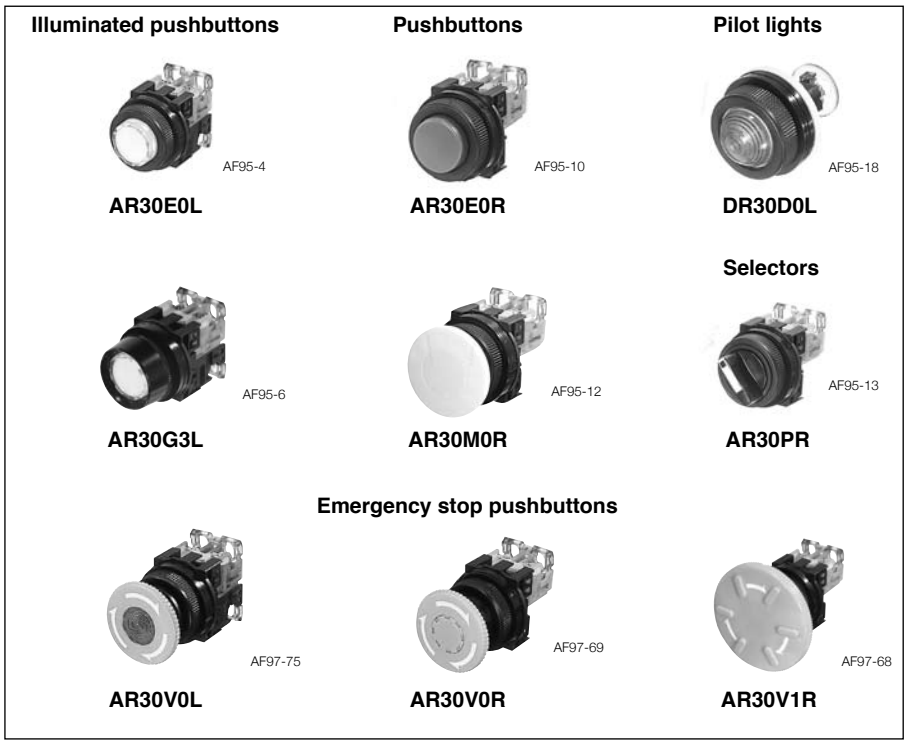
### Oil-and dust-proof operator module construction

The protection level of the AR30/DR30 operator modules conforms to IEC Standard IP65. The special seals protect the operator modules and switch mechanisms against oil, dust, and grime, thus ensuring high performance in dusty and moist environments.

### Miniaturization

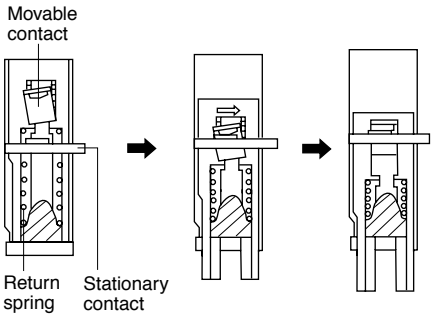
- Selector switches with 1NO+1NC: 41mm deep
  Pilot lights: 34mm deep
- The transformer now occupies far less space.




### Self-cleaning contacts

All the contacts are double break type and feature self-cleaning action. Every time the switch is operated, the contact surfaces are wiped with a sliding movement, thus ensuring high contact reliability even at low voltage and small current levels (5V, 5mA).

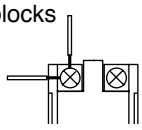



### Metal nut

Safer model with metal nut is also available

### Wiring

- Wiring from two directions is possible.
- Wiring in both vertical and lateral directions facilitates wiring in narrow spaces.
- Color coding of contact blocks makes wiring easy.
  1NO: Blue, 1NC: Red
  Lamp terminal and transformer unit: Black



### Safety

- A terminal cover is provided, assuring safety and security.
- FUJI's original Trigger Action mechanism is used in the emergency stop pushbuttons. They are suitable for emergency stop and safety. This mechanism prevents the contacts from moving until the button is pushed and locked.

### Protection

- Excellent oil-tight construction (IP65) of the operator.
- Closure of the contact block has been improved.

## ■ Approvals

# AR30 and DR30
# Quick reference guide

## ■ Illuminated pushbutton switches

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Extended round head | **AR30E0L, E5L** AF95-4 | Extended with full guard (24mm dia. with openings) | **AR30G2L, G7L** AF99-328 | Push-lock, turn-reset (40mm dia. with white arrow) | **AR30V5L** AF97-75 |
| Extended with transparent full guard (24mm dia.) | **AR30G4L, G9L** KKD05-164 | Extended with full guard (24mm dia.) | **AR30G3L, G8L** AF95-6 | Push-pull | **AR30Q7L** AF96-185 |

## ■ Pushbutton switches

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Flush round head | **AR30F0R, F5R** AF95-11 | Mushroom head (29mm dia.) | **AR30M4R** AF95-8 | Mushroom head with full guard (35mm dia. metal nut) | **AR30GSR** AF96-239 |
| Extended round head | **AR30E0R, E5R** AF95-10 | Extended with full guard (24mm dia.) | **AR30G1R, G6R** AF95-16 | Giant head | **AR30B0R** AF95-579 |
| Flush round head Symbol mark type | **AR30FAR, FBR** AF98-195 | Extended with half guard | **AR30G0R, G5R** AF95-9 | Giant head with guard | **AR30B1R** AF95-582 |
| Extended round head Symbol mark type | **AR30EAR, EBR** AF98-194 | Pin lock | **AR30GPR** AF96-240 | Giant head with full guard | **AR30B2R** AF95-580 |
| Mushroom head (40mm dia.) | **AR30M0R, M5R** AF95-12 | Mushroom head with full guard (40mm dia.) | **AR30M3R, M8R** AF95-17 | Giant head with full guard | **AR30B3R** AF95-581 |

Note: AR30M8R: Not approved standard

## ■ Pushbutton switches

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Pushbutton with selector ring (2-position) | **AR30S1R, S2R, S3R, S6R** AF97-506 | Push-lock, turn-reset (40mm dia. with white arrow) | **AR30V5R** AF97-69 | Pushbutton with emergency operating cap | **AR30FVR** AF96-187 |
| Push, turn-lock | **AR30N0R** AF95-583 | | | | |

## ■ Emergency stop pushbutton switches (conform to EN418)

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) | **AR30V0R** AF97-69 | Push-lock, turn-reset (65mm dia.with white arrow) | **AR30V1R** AF97-68 | Push-lock, pull-reset (35mm dia.) | **AR30Q2R** AF95-3 |
| Push-lock, turn-reset (40mm dia.) *See page 04/79, 04/101* | **AR30V2R** AF95-176 | | | | |

Notes: Provided with the ⊖ (Direct opening action)

## ■ Emergency stop illuminated pushbutton switches (conform to EN418)

| Operator | Type | Operator | Type |
|---|---|---|---|
| Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) | **AR30V0L** AF97-75 | Push-lock, turn-reset (40mm dia.) | **AR30V2L** AF95-2 |

Note: Provided with the ⊖ (Direct opening action)

# AR30 and DR30
# Quick reference guide

## ■ Selector switches

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Knob | **AR30PR, PCR** AF95-13 | Key | **AR30JR, JCR** AF95-15 | Key (Long durability) | **AR30JAR** AF95-15 |
| Lever | **AR30WR, WCR** AF95-14 | | | | |

## ■ Illuminated selector switches

| Operator | Type |
|---|---|
| Knob | **AR30PL** AF95-5 |

## ■ Pilot lights

| Lens | Type | Lens | Type | Lens | Type |
|---|---|---|---|---|---|
| Dome | **DR30D0L** AF95-18 | Dome with dimmer control | **DR30D1L** AF02-63 | Flush square (40mm sq. transparent lens) | **DR30M4M *** AF97-63 |
| Extended round | **DR30E3L** AF95-20 | Flush square (34mm sq. transparent lens) | **DR30F4M *** AF97-65 | | |
| Faceted | **DR30K0L** AF95-19 | Flush rectangular (Transparent lens) | **DR30F4N *** AF97-64 | | |

Note: With resistor unit and resistor types: Not approved standard
* LED 12V AC type: Not approved standard

## ■ Joy stick selector switches

| Handle | Type | Handle | Type | Handle | Type |
|---|---|---|---|---|---|
| Ball type | **AR30A0, A5** AF97-48 | Ball type with lock | **AR30A1, A6** AF97-44 | Rubber cap type | **AR30A2, A7** AF97-57 |

## ■ Buzzers

| Sound | Type | Sound | Type | Sound | Type |
|---|---|---|---|---|---|
| Electronic sound | **DR30B5*** AF96-381 | Magnetic sound | **DR30B0** AF96-378 | Electronic sound (IP54) | **DR30B8 *** AF96-245 |
| Electronic sound (economy) | **DR30B6** KK02-17 | | | | |

Note: * 6V AC, 110V DC types: Not approved standard

## ■ Numerical indicators

| Display | Type | Display | Type |
|---|---|---|---|
| One-digit | **DR30N1** KK02-55B | Two-digit | **DR30N2** KK02-56B |

Discontinued

Discontinued

# AR30 and DR30
# Part number system

## Illuminated pushbuttons

**AR30 E0L – 10 E3 R □**
① ② ③ ④ ⑤ ⑥

① **Product category**
AR30: 30mm-dia. illuminated pushbutton
30mm-dia. emergency stop illuminated pushbutton

② **Operator**
• Illuminated pushbutton
E0L: Extended round head
E5L: Extended round head (Alternate)
G4L: Extended with transparent full guard (24mm dia.)
G9L: Extended with transparent full guard (24mm dia. alternate)
G2L: Extended with full guard (24mm dia. with openings)
G7L: Extended with full guard (24mm dia. with openings, alternate)
G3L: Extended with full guard (24mm dia.)
G8L: Extended with full guard (24mm dia. alternate)
V5L: Push-lock, turn-reset (40mm dia. with white arrow) *1
Q7L: Push-pull
• Emergency stop illuminated pushbutton
V0L: Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow)
V2L: Push-lock, turn-reset (40mm dia.)

③ **Contact arrangement**

| | |
|---|---|
| 10: 1NO | 30: 3NO |
| 01: 1NC | 03: 3NC |
| 11: 1NO+1NC | 33: 3NO+3NC |
| 20: 2NO | 40: 4NO |
| 02: 2NC | 04: 4NC |
| 22: 2NO+2NC | 50: 5NO |
| | 05: 5NC |

④ **Lamp voltage**
•Incandescent lamp
54: 5.5V AC/DC, without transformer
C4: 15V AC/DC, without transformer
D4: 20V AC/DC, without transformer
E4: 24V AC/DC, without transformer
H4: 100-110V AC, with transformer
L4: 115-127V AC, with transformer
M4: 200-220V AC, with transformer
Q4: 230-254V AC, with transformer
S4: 350-380V AC, with transformer
T4: 400-440V AC, with transformer
V4: 480V AC, with transformer
W4: 500-550V AC, with transformer
•LED lamp
A3: 6V AC, without transformer
63: 6V DC, without transformer
B3: 12V AC/DC, without transformer
C3: 15V AC/DC, without transformer
E3: 24V AC/DC, without transformer
H3: 100-110V AC, with transformer
L3: 115-127V AC, with transformer
M3: 200-220V AC, with transformer
Q3: 230-254V AC, with transformer
S3: 350-380V AC, with transformer
T3: 400-440V AC, with transformer
V3: 480V AC, with transformer
W3: 500-550V AC, with transformer

⑤ **Color of lens**

| | |
|---|---|
| G: Green | Y: Yellow |
| R: Red *2 | A: Orange |
| W: White | S: Blue |

⑥ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z8: With a contact protection cover
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards
ZM: Metal nut

Notes: *1 Products with no trigger action mechanism. These products cannot be used as emergency stop switches that comply with EN standards.
*2 Button color of emergency stop illuminated switches are Red only.
• The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

# AR30 and DR30
# Part number system

## Pushbuttons

**AR30 E0R – 10 R □ □**
① ② ③ ④ ⑤ ⑥

① **Product category**
AR30: 30mm-dia. pushbutton
30mm-dia. emergency stop pushbutton

② **Operator**
•Pushbutton switch
F0R: Flush round head
F5R: Flush round head (Alternate)
E0R: Extended round head
E5R: Extended round head (Alternate)
FAR: Flush round head (Symbol mark type)
FBR: Flush round head (Symbol mark type, alternate)
EAR: Extended round head (Symbol mark type)
EBR: Extended round head (Symbol mark type, alternate)
M0R: Mushroom head (40mm dia.)
M5R: Mushroom head (40mm dia. Alternate)
M4R: Mushroom head (29mm dia.)
G1R: Extended with full guard (24mm dia.)
G6R: Extended with full guard (24mm dia. Alternate)
GPR: Pin lock
G0R: Extended with half guard
G5R: Extended with half guard (Alternate)
M3R: Mushroom head with full guard (40mm dia.)
M8R: Mushroom head with full guard (40mm dia. Alternate)
GSR: Mushroom head with full guard (35mm dia. metal nut)
B0R: Giant head
B1R: Giant head with guard
B2R: Giant head with full guard
B3R: Giant head with full guard
S1R: Pushbutton with selector ring (2-position)
S2R: Pushbutton with selector ring (2-position)
S3R: Pushbutton with selector ring (2-position)
S6R: Pushbutton with selector ring (2-position)
N0R: Push, turn-lock
V5R: Push-lock, turn-reset (40mm dia. with white arrow) *1
FVR: Pushbutton with emergency operating cap
•Emergency stop pushbutton switch
V0R: Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow)
V2R: Push-lock, turn-reset (40mm dia.)
V1R: Push-lock, turn-reset (Soft-touch 65mm dia. with white arrow)
Q2R: Push-lock, pull-reset (35mm dia.)

③ **Contact arrangement**

| | |
|---|---|
| 10: 1NO | 30: 3NO |
| 01: 1NC | 03: 3NC |
| 11: 1NO+1NC | 33: 3NO+3NC |
| 20: 2NO | 40: 4NO |
| 02: 2NC | 04: 4NC |
| 22: 2NO+2NC | 44: 4NO+4NC |
| | 50: 5NO |
| | 05: 5NC |

④ **Color of button**

| | |
|---|---|
| G: Green | Y: Yellow |
| R: Red*2 | A: Orange |
| B: Black | S: Blue |
| W: White | C: Clear (For AR30FAR, FBR, EAR, EBR) |
| T: Green, Red, Black (For AR30F0R) | |

⑤ **Symbol mark (For AR30FAR, FBR, EAR, EBR)**

| Symbol mark | ◯ | | I | | Ⓣ | | ◯ | I | Ⓣ |
|---|---|---|---|---|---|---|---|---|---|
| Color of button | White | Black | White | Black | White | Black | Clear | | |
| Color of mark | Red | | Green | | Green | | Black | | |
| Code | 01 | 02 | 03 | 04 | 11 | 12 | 02B | 04B | 12B |

⑥ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z8: With a contact protection cover
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards
ZM: Metal nut

Notes: *1 Products with no trigger action mechanism. These products cannot be used as emergency stop switches that comply with EN standards.
*2 Button color of emergency stop switches are Red only.
• The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

# AR30 and DR30
# Part number system

## Selector and illuminated selector switches

**AR30 PL – 2 □ 10 E3 G □ □**
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① **Product category**
AR30: 30mm dia. selector switch and illuminated selector switch

② **Operator**
•Selector switch
PR: Knob
PCR: Knob operated control type
WR: Lever
WCR: Lever operated control type
JR: Key
JCR: Key operated control type
JAR: Key (Long durability)
•Illuminated selector switch
PL: Knob

③ **Operation**
2: 2-position, maintained
0: 2-position, spring return
3: 3-position, maintained
6: 3-position, spring/manual return (Left to center)
7: 3-position, spring/manual return (Right to center)
1: 3-position, spring return
4: 4-position, maintained (For AR30PCR, WCR)
5: 5-position, maintained (For AR30PCR, WCR)

④ **Key removable position**
A: Left
B: Left and right
C: Left, right and center
D: Right
E: Center
F: Right and center
G: Left and center

⑤ **Contact arrangement**

| | |
|---|---|
| 10: 1NO | 30: 3NO |
| 01: 1NC | 03: 3NC |
| 11: 1NO+1NC | 33: 3NO+3NC |
| 20: 2NO | 40: 4NO |
| 02: 2NC | 04: 4NC |
| 22: 2NO+2NC | 44: 4NO+4NC |
| | 50: 5NO |
| | 05: 5NC |

Note: Control type: *See page 04/85 to 04/87*

⑥ **Lamp voltage**
•Incandescent lamp
54: 5.5V AC/DC, without transformer
C4: 15V AC/DC, without transformer
D4: 20V AC/DC, without transformer
E4: 24V AC/DC, without transformer
H4: 100-110V AC, with transformer
L4: 115-127V AC, with transformer
M4: 200-220V AC, with transformer
Q4: 230-254V AC, with transformer
S4: 350-380V AC, with transformer
T4: 400-440V AC, with transformer
V4: 480V AC, with transformer
W4: 500-550V AC, with transformer
•LED lamp
A3: 6V AC, without transformer
63: 6V DC, without transformer
B3: 12V AC/DC, without transformer
C3: 15V AC/DC, without transformer
E3: 24V AC/DC, without transformer
H3: 100-110V AC, with transformer
L3: 115-127V AC, with transformer
M3: 200-220V AC, with transformer
Q3: 230-254V AC, with transformer
S3: 350-380V AC, with transformer
T3: 400-440V AC, with transformer
V3: 480V AC, with transformer
W3: 500-550V AC, with transformer

⑦ **Color of knob**
B: Black (Not available for illuminated selector switch)
G: Green
R: Red
W: White (Not available for selector switch)
Y: Yellow (Not available for selector switch)
A: Orange (Not available for selector switch)
S: Blue (Not available for selector switch)

⑧ **Key type No.**
A, B, C, D, E or F
("A" is standard)

⑨ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z8: With a contact protection cover
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards
ZM: Metal nut

Note: • The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

## Pilot lights

**DR30 D0L – E3 W □**
① ② ③ ④ ⑤

① **Product category**
DR30: 30mm dia. pilot light

② **Lens**
D0L: Dome
E3L: Extended round
K0L: Faceted
D1L: Dome with dimmer control
F4M: Flush square (34mm sq. transparent lens)
F4N: Flush rectangular (Transparent lens)
M4M: Flush square (40mm sq. transparent lens)

③ **Lamp voltage**
•Incandescent lamp
54: 5.5V AC/DC, without transformer
C4: 15V AC/DC, without transformer
D4: 20V AC/DC, without transformer
E4: 24V AC/DC, without transformer
H4: 100-110V AC, with transformer
L4: 115-127V AC, with transformer
M4: 200-220V AC, with transformer
Q4: 230-254V AC, with transformer
S4: 350-380V AC, with transformer
T4: 400-440V AC, with transformer
V4: 480V AC, with transformer
W4: 500-550V AC, with transformer
FQ: 50V DC, with resistor*
HQ: 110V DC, with resistor*
MQ: 220V DC, with resistor*
H8: 100-110V AC, short-body with transformer
L8: 115-127V AC, short-body with transformer
M8: 200-220V AC, short-body with transformer

•LED lamp
A3: 6V AC, without transformer
63: 6V DC, without transformer
B3: 12V AC/DC, without transformer
C3: 15V AC/DC, without transformer
E3: 24V AC/DC, without transformer
H3: 100-110V AC, with transformer
L3: 115-127V AC, with transformer
M3: 200-220V AC, with transformer
Q3: 230-254V AC, with transformer
S3: 350-380V AC, with transformer
T3: 400-440V AC, with transformer
V3: 480V AC, with transformer
W3: 500-550V AC, with transformer
H7: 110V DC, with resistor unit
FR: 50V DC, with resistor*
HR: 110V DC, with resistor*
MR: 220V DC, with resistor*
H9: 100-110V AC, short-body with transformer
L9: 115-127V AC, short-body with transformer
M9: 200-220V AC, short-body with transformer

•LED unit
(For DR30F4M, F4N, M4M type)
65: 6V DC, without transformer
25: 12V AC, without transformer
B5: 12V AC/DC, without transformer
E5: 24V AC/DC, without transformer
H5: 100-110V AC, with transformer
L5: 115-127V AC, with transformer
M5: 200-220V AC, with transformer
Q5: 230-254V AC, with transformer
S5: 350-380V AC, with transformer
T5: 400-440V AC, with transformer
V5: 480V AC, with transformer
W5: 500-550V AC, with transformer
HE: 110V DC, with resistor unit

Note: * DR30D0L, K0L type only

④ **Color of lens or color plate**
G: Green
R: Red
W: White
Y: Yellow
A: Orange
S: Blue

⑤ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards
ZM: Metal nut

Note: • The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

# AR30 and DR30
# Part number system

### Joy stick selector switches

**AR30A 0 N – A0A0 B**
① ②③ ④ ⑤

① **Product category**
AR30A: 30mm-dia. Joy stick selector switch

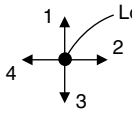
② **Handle**
0: Ball type (without lock, manual return)
1: Ball type with lock (manual return)
2: Rubber cap type (without lock, manual return)
5: Ball type (without lock, spring return)
6: Ball type with lock (spring return)
7: Rubber cap type (without lock, spring return)

③ **Terminal**
N: Screw
H: Solder/tab

④ **Contact arrangement**

| Contact arrangement | | Blank | 1NO | 1NC | 1NO+1NC | 2NO | 2NC | 2NO+2NC |
|---|---|---|---|---|---|---|---|---|
| Code | Screw | 0 | A | B | 1 | D | E | – |
| | Solder/tab | 0 | – | – | 1 | – | – | 2 |

Operating direction code of contacts




Locked position

1: Upper 2: Right
3: Lower 4: Left

Ex. AR30A0N-A 0 A 0 B
1 2 3 4

⑤ **Handle color**
B: Black

### Buzzers

**DR30B 5 – E B**
① ② ③④

① **Product category**
DR30B: 30mm-dia. buzzer

② **Sound**
5: Electronic sound
6: Electronic sound (economy)
0: Magnetic sound
8: Electronic sound (IP54)

③ **Operating voltage**
A: 6V AC (Type “5”, “8”)
6: 6V DC (Type “5”, “8”)
E: 12-24V AC/DC (Type “6” : 24V DC)
F: 35-48V AC/DC (Type “5”, “8”)
G: 24V AC (Type “6”)
H: 100-110V AC
M: 200-220V AC
1: 100-110V DC (Type “5”, “8”)

④ **Color of head**
B: Black

## ■ Ordering information

Specify the following:
1. Type number
   For the CCC approved product, add the suffix **(CCC)** to the part number

   Example: Pushbutton switch AR30F0R-11B**(CCC)**

## ■ Standards approved

| | |
|---|---|
| UL508 | File No. E44592 |
| CSA C22.2 No.14 | File No. LR20479 |
| TÜV: EN60947-5-1 | Pushbutton, Illuminated pushbutton: R9551062<br>Selector, Illuminated selector: R9551060<br>Pilot lights: R9551061<br>Joy stick selector switch: R2050803<br>(Lever switch)<br>Buzzer: J9950091 |
| TÜV: EN60947-5-1<br>EN60947-5-5 | Emergency stop pushbutton<br>Emergency stop illuminated pushbutton<br>: R50028146 |

## ■ Specifications (Indoor use)

| Description | Pushbutton switch<br>Illuminated pushbutton switch<br>Emergency stop pushbutton switch<br>Emergency stop illuminated pushbutton switch<br>Selector switch<br>Illuminated selector switch | Joy stick selector<br>(Lever switch) | Pilot light |
|---|---|---|---|
| Rated insulation voltage | 600V AC/DC *1 | 250V AC/DC | 250V AC/DC *2 |
| Mechanical durability | *See page 66* | 250,000 operations | – |
| Electrical durability | 500,000 operations at 220V AC 6A<br>1 million operations at 220V AC 3A | 100,000 operations<br>at 220V AC 1A<br>(Res. load) | – |
| Operating frequency | 1200 operations/hour (On-load factor: 40%) | | – |
| Dielectric strength | 2500V AC, 1 minute *3 | 2000V AC, 1 minute *4 | |
| Insulation resistance | 100MΩ or more (500V DC megger) | 100MΩ or more (500V DC megger) | |
| Rated impulse dielectric strength | 6kV | – | 6kV |
| Conditional short-circuit current | 1000A | 1000A | – |
| Short-circuit protective device | Fuse 15A | Fuse 1A | – |
| Pollution degree | 3 | | |
| Vibration | Resonance: 10 to 55Hz, double amplitude 0.1mm *5<br>Constant: 16.7Hz, double amplitude 3mm | | |
| Shock | Malfunction durability: 100m/s² *6<br>Mechanical durability: 500m/s² | | Mechanical durability: 500m/s² |
| Ambient temperature<br>(No condensation or no icing) | -20 to +70°C | -5 to +70°C | -20 to +50°C |
| Storage temperature | -40 to +80°C | | |
| Humidity | 45 to 85% RH (within -5 to +40°C) | | |
| Degree of protection | IP65 *7 | | |

Notes: *1 Illuminated type without transformer: 250V AC/DC
*2 Pilot light with transformer: 600V AC
*3 Illuminated type without transformer: 2000V AC, 1 minute
*4 Pilot light with transformer: 2500V AC, 1 minute
*5 Emergency stop type: 10 to 500Hz, double amplitude 0.7mm (acceleration 50m/s²), according to the test condition of EN60947-5-5 (1998)
*6 Emergency stop type: 150m/s²
*7 AR30Q7L and DR30D1L type: IP40

### ● Mechanical durability

| Description | | Operations |
|---|---|---|
| Pushbutton switch<br>Illuminated pushbutton switch<br>Emergency stop pusubutton switch<br>Emergency stop illuminated pusubutton | Momentary action<br>Alternate action<br>With selector ring<br>Push-lock, turn-reset<br>Push-lock, pull-reset | 5 million<br>1 million<br>100,000<br>100,000<br>30,000 |
| Selector switch | Maintained 1, 2, 3, 4-contact<br>Maintained 5, 6, 7, 8-contact<br>Control type, spring return, spring/manual return | 1 million<br>500,000<br>200,000 |
| Illuminated selector switch | Maintained<br>Without transformer 1, 2, 3-contact<br>4-contact<br>With transformer 1, 2-contact<br>3-contact<br><br>Spring return, spring/manual return | <br>1 million<br>500,000<br>1 million<br>500,000<br><br>200,000 |

Note: Key insertion/removal durability for selector switch key types
- Key type 10,000
- Key (Long durability) type 20,000

### ● Buzzers

| Item | DR30B5 | DR30B6 | DR30B0 | DR30B8 |
|---|---|---|---|---|
| Rated insulation voltage | Without transformer: 60V AC/DC With transformer: 250V AC *1 | | | |
| Sound level | 90dB (0.1m)<br>70dB (1m) | | | 80dB (0.1m)<br>60dB (1.0m) |
| Durability | 1000h | | 80h | 1000h |
| Frequency | 2.4 to 3.3kHz | 1.9 to 2.5kHz | | 2.4 to 3.3kHz |
| Intermittent cycle | Approx. 170-cycle/min | – | – | Approx. 170-cycle/min |
| Current consumption | See the table below | | | |
| Dielectric strength | Without transformer: 1000V AC 1 minute With transformer: 2000V AC 1 minute *2 | | | |
| Insulation resistance | 100MΩ or more (500V DC megger) | | | |
| Pollution degree | 3 | | | |
| Vibration | Resonance: 10 to 55Hz, double amplitude 0.1mm<br>Constant: 16.7Hz, double amplitude 3.0mm | | | |
| Shock | Mechanical durability: 500m/s$^2$ | | | |
| Ambient temperature | –20 to +60˚C (No condensation or no icing)<br>(with resistor unit: –20 to +40˚C) | | | |
| Storage temperature | –30 to +70˚C | | | |
| Humidity | 45 to 85%RH (within –5 to 40˚C) | | | |
| Degree of protection | IP00 | | | IP54 |

Note: *1 DR30B0 (without transformer): 250V AC
*2 DR30B0 (without transformer): 2000V AC 1 minute

### •Current consumption

| Operational voltage | Current consumption<br>DR30B5, DR30B8 | DR30B6 | DR30B0 |
|---|---|---|---|
| 6V AC | 70mA AC | – | – |
| 6V DC | 35mA DC | 25mA AC | – |
| 24V AC | – | 45mA AC | – |
| 24V DC | – | 30mA DC | – |
| 24V AC/DC | 40mA AC, 25mA DC | 30mA AC, 20mA DC | – |
| 48V AC/DC | 65mA AC, 20mA DC | – | – |
| 110V AC | 30mA AC | 30mA AC | 30mA AC |
| 110V DC | 30mA DC | – | – |
| 220V AC | 15mA AC | 15mA AC | 20mA AC |

## ■ Contact ratings

### • UL/CSA standards

**AC** (COS ø=0.35)

| Contact rated code | 120V | | 240V | | 480V | | 600V | |
|---|---|---|---|---|---|---|---|---|
| | Making current | Breaking current | Making current | Breaking current | Making current | Breaking current | Making current | Breaking current |
| A600 | 60A | 6.0A | 30A | 3.0A | 15A | 1.5A | 12A | 1.2A |

**DC** $T_{0.95}$= 6P (Max. 300ms)

| Description | Contact rated code | Making current · Breaking current | | |
|---|---|---|---|---|
| | | 125V | 250V | 301V–600V |
| Illuminated pushbutton switch<br>Pushbutton<br>(Ring type selector switch: AR30S2R only)<br>Emergency stop pushbutton switch<br>Emergency stop illuminated pushbutton switch<br>(Except the overlap contact types) | P600 | 1.1A | 0.55A | 0.2A |
| Overlap contact types of products shown above<br>Pushbutton<br>(Ring type selector switch: AR30S1R, S6R only)<br>Selector switch (2-position only, except the overlap contact types)<br>Illuminated selector switch<br>(2-position only, except the overlap contact types) | Q600 | 0.55A | 0.27A | 0.1A |
| Pushbutton<br>(Ring type selector switch: AR30S3R only)<br>Selector switch (2-pos./overlap contact type, 3-, 4-, 5-pos. type)<br>Illuminated selector switch (2-pos./overlap contact type, 3-pos. type) | R300 | 0.22A | 0.11A | – |

Note: Joy stick selector switches (Lever switches): 250V AC, 5A (Res. load) 125V DC, 0.2A 24V DC, 1A (Res. load)

### • EN standard/TÜV approved

| Description | Rated operational current | | | |
|---|---|---|---|---|
| | Rated thermal current | Rated operational voltage | AC15 (Ind. load) | DC13 (Ind. load) |
| | | | Rated operational current | Rated operational current |
| Illuminated pushbutton switch | 10A | 24V | 6.0A | 4.0A |
| Pushbutton (Except the selector ring type) | | 120V | 6.0A | – |
| Emergency stop pushbutton switch | | 125V | – | 1.3A |
| Emergency stop illuminated pushbutton switch | | 240V | 6.0A | – |
| Selector switch (2-position) | | 250V | – | 0.45A |
| Illuminated selector switch (2-position) | | 480V | 2.5A | – |
| | | 600V | 2.0A | – |
| Selector switch (3, 4, 5-position) | 10A | 24V | 6.0A | 2.0A |
| Illuminated selector switch (3-position) | | 120V | 6.0A | – |
| Pushbutton with selector ring | | 125V | – | 0.65A |
| | | 240V | 6.0A | – |
| | | 250V | – | 0.23A |
| | | 480V | 2.5A | – |
| | | 600V | 2.0A | – |
| Joy stick selector switch (Lever switch) | 5A | 24V | – | 0.7A |
| | | 120V | 0.3A | – |
| | | 125V | – | 0.15A |
| | | 240V | 0.3A | – |

Lamp rated voltage UL/CSA standards, TÜV approved

| | LED lamp | Incandescent lamp |
|---|---|---|
| Full-voltage (without transformer) | Max. 24V AC/DC | Max. 30V AC/DC |
| With transformer | Max. 550V AC (Short-body type: Max. 220V AC) | |

### ■ Operating characteristic (1NO+1NC)

| Description | Pushbutton<br>Illuminated pushbutton | Emergency stop pushbutton<br>Emergency stop illuminated pushbutton | | Selector *2<br>Illuminated selector | | |
|---|---|---|---|---|---|---|
| | | Push-lock type | Push-pull type | Maintained | Spring/manual return | Spring return |
| Ave. required operating force | 9N (Push-lock type: 20N) | 30N *1 | 45N | 0.15N•m | 0.13N•m | 0.1N•m |
| Operating travel | Approx. 6mm<br>(Push-lock type: Approx. 9mm, operation angle: Approx. 45°) | Approx. 9mm<br>(Operation angle: Approx. 45°) | Approx. 9mm | 2-position: Approx. 90°<br>3-position: Approx. 45°<br>4-position: Approx. 40°<br>5-position: Approx. 30° | 3-position: Approx. 45° | 2-position: Approx. 60°<br>3-position: Approx. 45° |
| Required return force | –<br>(Push-lock type: 0.6N•m) | 0.6N•m | 30N (pull) | 0.15N•m | 0.13N•m | – |

Notes: *1 AR30V2R type: 45N
*2 4-position, 5-position: 2NO+2NC

### ■ Lamp ratings

**•Illuminated pushbuttons, illuminated selectors, pilot lights (round type)**

| Transformer | Lamp voltage | LED (lamp base: BA9S/13) | | | Incandescent (lamp base: BA9S/13) | | |
|---|---|---|---|---|---|---|---|
| | | Type | Rated voltage | Consumption | Type | Rated voltage | Consumption |
| Without transformer | 5.5V AC/DC | – | – | – | AHX135 | 6.3V AC/DC | 0.9W |
| | 6V AC | APX510-6□ | 6V AC | Green, red, orange, amber: 7mA AC<br>Yellow: 26mA AC Blue: 16mA AC | – | – | – |
| | 6V DC | APX510-D6□ | 6V DC | Green, red, orange, amber: 11mA DC<br>Yellow: 33mA DC Blue: 22mA DC | – | – | – |
| | 12V AC/DC | APX510-12□ | 12V AC/DC | 14mA AC, 11mA DC | – | – | – |
| | 15V AC/DC | APX510-15□ | 15V AC/DC | 13mA AC, 11mA DC | AHX279 | 18V AC/DC | 0.8W |
| | 20V AC/DC | – | – | – | AHX144 | 24V AC/DC | 0.9W |
| | 24V AC/DC | APX510-24□ | 24V AC/DC | 12mA AC, 11mA DC | AHX129 | 30V AC/DC | 0.8W |
| With transformer (Standard type: AR9T511) | 110V AC | APX510-6□ | 6V AC | 1.5VA | AHX135 | 6.3V AC/DC | 2VA |
| | 127V AC | | | | | | 2VA |
| | 220V AC | | | | | | 2VA |
| | 254V AC | APX510-6□ | 6V AC | 2.5VA | AHX135 | 6.3V AC/DC | 2.5VA |
| | 380V AC | | | | | | 2.5VA |
| | 440V AC | | | | | | 2.5VA |
| | 480V AC | | | | | | 2.5VA |
| | 550V AC | | | | | | 2.5VA |
| With resistor unit (AR9T519-H) | 110V DC | APX510-24□ | 24V AC/DC | 1.2W | – | – | – |

Notes: • Short body pilot lights: 110V AC, 127V AC, 220V AC only
• Replace the □ mark by the lamp luminous color code, *see page 70*

**•Pilot lights with resistor**

| Lamp Voltage | LED (lamp base: E12/15) | | | Incandescent (lamp base: E12/15) | | |
|---|---|---|---|---|---|---|
| | Type | Rated voltage | Consumption | Type | Rated voltage | Consumption |
| 50V DC | APX507-24□ * | 24V AC/DC | 0.8W | AHX130 | 18V AC/DC | 5W |
| 110V DC | | | 1.7W | | | 10W |
| 220V DC | | | 3.3W | | | 20W |

Notes: * White: APX509-24O
• Replace the □ mark by the lamp luminous color code, *see page 70*

**•Pilot lights (DR30F4M, F4N, M4M types)**

| Transformer | Lamp voltage | LED (lamp base: BA9S/13) | | | Incandescent (lamp base: BA9S/13) | | |
|---|---|---|---|---|---|---|---|
| | | Type* | Rated voltage | Consumption | Type | Rated voltage | Consumption |
| Without transformer | 5.5V AC/DC | – | – | – | AHX135 | 6.3V AC/DC | 0.9W |
| | 6V DC | DR9Q001-6□<br>DR9Q002-6□<br>DR9Q003-6□ | 6V DC | Yellow, orange, amber: 120mA DC<br>Red: 48mA DC | – | – | – |
| | 12V AC | DR9Q001-2□<br>DR9Q002-2□<br>DR9Q003-2□ | 12V AC | Yellow, orange, amber: 90mA AC<br>Red: 25mA AC | – | – | – |
| | 12V AC/DC | DR9Q001-B□<br>DR9Q002-B□<br>DR9Q003-B□ | 12V AC/DC | Yellow, orange, amber:<br>84mA AC, 60mA DC<br>Red: 27mA AC, 24mA DC | – | – | – |
| | 15V AC/DC | – | – | – | AHX279 | 20V AC/DC | 0.8W |
| | 20V AC/DC | – | – | – | AHX144 | 24V AC/DC | 0.9W |
| | 24V AC/DC | DR9Q001-E□<br>DR9Q002-E□<br>DR9Q003-E□ | 24V AC/DC | Yellow, orange, amber:<br>42mA AC, 30mA DC<br>Red: 16mA AC, 12mA DC | AHX129 | 30V AC/DC | 0.8W |
| With transformer unit (LED: AR9T557) (Incandescent: AR9T511) | 110V AC | DR9Q001-2□<br>DR9Q002-2□<br>DR9Q003-2□ | 12V AC | 3VA | AHX135 | 6.3V AC/DC | 2VA |
| | 127V AC | | | | | | 2VA |
| | 220V AC | | | | | | 2VA |
| | 254V AC | | | | | | 2.5VA |
| | 380V AC | | | | | | 2.5VA |
| | 440V AC | | | | | | 2.5VA |
| | 480V AC | | | | | | 2.5VA |
| | 550V AC | | | | | | 2.5VA |
| With resistor unit (AR9T519-H) | 110V DC | DR9Q001-E□<br>DR9Q002-E□<br>DR9Q003-E□ | 24V AC/DC | 1.4W | – | – | – |

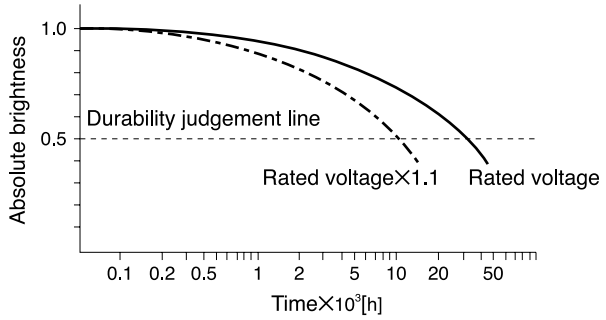
Notes: * DR9Q001: For DR30M4M type
DR9Q002: For DR30F4N type
DR9Q003: For DR30F4M type
• Replace the □ mark by the lamp luminous color code, *see page 70*

## ■ Lamp durability

| Lamp | Durability | Judgement criterion |
|---|---|---|
| LED | Approx. 30000h | When brightness is less than 50% of initial value |
| Incandescent | Approx. 5000h (AC) | When the bulb burns out |

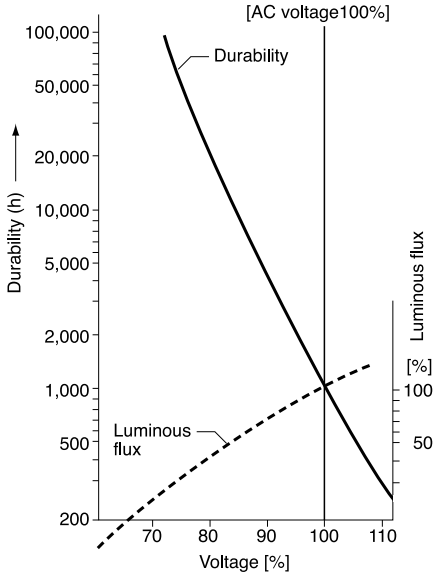
Note: The operating voltage for incandescent lamps is set at 80 to 90% of the lamp's rated voltage.

### Estimated durability for LED lamps




Notes: • Durability at Ta=25˚C
• Durability is affected by temperature, humidity, and voltage fluctuation.

### Incandescent lamp voltage characteristics




## ■ Combination of lens color and LED luminous color

| Button color (lens or color plate) | | LED lamp (high-brightness) | | | LED unit | | | |
|---|---|---|---|---|---|---|---|---|
| Color | Code | Luminous color | Type | Type *1 | Luminous color | Type *2 | Type *3 | Type *4 |
| Green | G | Green | APX510-■G | APX507-24G | Yellow | DR9Q003-■Y | DR9Q002-■Y | DR9Q001-■Y |
| Red | R | Red | APX510-■R | APX507-24R | Red | DR9Q003-■R | DR9Q002-■R | DR9Q001-■R |
| White | W | Orange | APX510-■O | APX509-24O | Orange | DR9Q003-■O | DR9Q002-■O | DR9Q001-■O |
| Yellow | Y | Yellow | APX510-■Y | APX507-24Y | Yellow | DR9Q003-■Y | DR9Q002-■Y | DR9Q001-■Y |
| Orange | A | Amber | APX510-■A | APX507-24A | Amber | DR9Q003-■A | DR9Q002-■A | DR9Q001-■A |
| Blue | S | Blue | APX510-■S | APX507-24S | – | – | – | – |

Notes: *1 For pilot light with resistor
*2 For DR30F4M type
*3 For DR30F4N type
*4 For DR30M4M type
• Replace the ■ mark by the lamp voltage code, *see page 68, 69*

## ■ Illuminated pushbutton switches

| Operator | Trans-former | Contact | LED lamp Momentary action Type | LED lamp Alternate action Type | Incandescent lamp Momentary action Type | Incandescent lamp Alternate action Type |
|---|---|---|---|---|---|---|
| Extended round head AF95-4 | Without | 1NO | **AR30E0L-10■3□** | **AR30E5L-10■3□** | **AR30E0L-10■4□** | **AR30E5L-10■4□** |
| | | 1NC | **AR30E0L-01■3□** | **AR30E5L-01■3□** | **AR30E0L-01■4□** | **AR30E5L-01■4□** |
| | | 1NO+1NC | **AR30E0L-11■3□** | **AR30E5L-11■3□** | **AR30E0L-11■4□** | **AR30E5L-11■4□** |
| | | 2NO+2NC | **AR30E0L-22■3□** | — | **AR30E0L-22■4□** | — |
| | With | 1NO | **AR30E0L-10■3□** | **AR30E5L-10■3□** | **AR30E0L-10■4□** | **AR30E5L-10■4□** |
| | | 1NC | **AR30E0L-01■3□** | **AR30E5L-01■3□** | **AR30E0L-01■4□** | **AR30E5L-01■4□** |
| | | 1NO+1NC | **AR30E0L-11■3□** | **AR30E5L-11■3□** | **AR30E0L-11■4□** | **AR30E5L-11■4□** |
| Extended with transparent full guard (24mm dia.) KKD05-164 | Without | 1NO | **AR30G4L-10■3□** | **AR30G9L-10■3□** | **AR30G4L-10■4□** | **AR30G9L-10■4□** |
| | | 1NC | **AR30G4L-01■3□** | **AR30G9L-01■3□** | **AR30G4L-01■4□** | **AR30G9L-01■4□** |
| | | 1NO+1NC | **AR30G4L-11■3□** | **AR30G9L-11■3□** | **AR30G4L-11■4□** | **AR30G9L-11■4□** |
| | | 2NO+2NC | **AR30G4L-22■3□** | — | **AR30G4L-22■4□** | — |
| | With | 1NO | **AR30G4L-10■3□** | **AR30G9L-10■3□** | **AR30G4L-10■4□** | **AR30G9L-10■4□** |
| | | 1NC | **AR30G4L-01■3□** | **AR30G9L-01■3□** | **AR30G4L-01■4□** | **AR30G9L-01■4□** |
| | | 1NO+1NC | **AR30G4L-11■3□** | **AR30G9L-11■3□** | **AR30G4L-11■4□** | **AR30G9L-11■4□** |
| Extended with full guard (24mm dia. with openings) AF99-328 | Without | 1NO | **AR30G2L-10■3□** | **AR30G7L-10■3□** | **AR30G2L-10■4□** | **AR30G7L-10■4□** |
| | | 1NC | **AR30G2L-01■3□** | **AR30G7L-01■3□** | **AR30G2L-01■4□** | **AR30G7L-01■4□** |
| | | 1NO+1NC | **AR30G2L-11■3□** | **AR30G7L-11■3□** | **AR30G2L-11■4□** | **AR30G7L-11■4□** |
| | | 2NO+2NC | **AR30G2L-22■3□** | — | **AR30G2L-22■4□** | — |
| | With | 1NO | **AR30G2L-10■3□** | **AR30G7L-10■3□** | **AR30G2L-10■4□** | **AR30G7L-10■4□** |
| | | 1NC | **AR30G2L-01■3□** | **AR30G7L-01■3□** | **AR30G2L-01■4□** | **AR30G7L-01■4□** |
| | | 1NO+1NC | **AR30G2L-11■3□** | **AR30G7L-11■3□** | **AR30G2L-11■4□** | **AR30G7L-11■4□** |
| Extended with full guard (24mm dia.) AF95-6 | Without | 1NO | **AR30G3L-10■3□** | **AR30G8L-10■3□** | **AR30G3L-10■4□** | **AR30G8L-10■4□** |
| | | 1NC | **AR30G3L-01■3□** | **AR30G8L-01■3□** | **AR30G3L-01■4□** | **AR30G8L-01■4□** |
| | | 1NO+1NC | **AR30G3L-11■3□** | **AR30G8L-11■3□** | **AR30G3L-11■4□** | **AR30G8L-11■4□** |
| | | 2NO+2NC | **AR30G3L-22■3□** | — | **AR30G3L-22■4□** | — |
| | With | 1NO | **AR30G3L-10■3□** | **AR30G8L-10■3□** | **AR30G3L-10■4□** | **AR30G8L-10■4□** |
| | | 1NC | **AR30G3L-01■3□** | **AR30G8L-01■3□** | **AR30G3L-01■4□** | **AR30G8L-01■4□** |
| | | 1NO+1NC | **AR30G3L-11■3□** | **AR30G8L-11■3□** | **AR30G3L-11■4□** | **AR30G8L-11■4□** |
| Push-lock, turn-reset (40mm dia. with white arrow) AF97-75 | Without | 1NO | — | **AR30V5L-10■3□** | — | **AR30V5L-10■4□** |
| | | 1NC | — | **AR30V5L-01■3□** | — | **AR30V5L-01■4□** |
| | | 1NO+1NC | — | **AR30V5L-11■3□** | — | **AR30V5L-11■4□** |
| | | 2NO | — | **AR30V5L-20■3□** | — | **AR30V5L-20■4□** |
| | | 2NC | — | **AR30V5L-02■3□** | — | **AR30V5L-02■4□** |
| | | 3NC | — | **AR30V5L-03■3□** | — | **AR30V5L-03■4□** |
| | With | 1NO | — | **AR30V5L-10■3□** | — | **AR30V5L-10■4□** |
| | | 1NC | — | **AR30V5L-01■3□** | — | **AR30V5L-01■4□** |
| | | 1NO+1NC | — | **AR30V5L-11■3□** | — | **AR30V5L-11■4□** |
| | | 2NO | — | **AR30V5L-20■3□** | — | **AR30V5L-20■4□** |
| | | 2NC | — | **AR30V5L-02■3□** | — | **AR30V5L-02■4□** |
| Push-pull (35mm dia.) AF96-185 | Without | 1NO+1NC | **AR30Q7L-11■3□** | — | **AR30Q7L-11■4□** | — |
| | With | 1NO+1NC | **AR30Q7L-11■3□** | — | **AR30Q7L-11■4□** | — |

Note: ■ □ *See page 72*

**•Lens color**

Replace the□ mark by the lens color code

| Color | Green | Red | White | Blue | Yellow | Orange |
|---|---|---|---|---|---|---|
| Code | G | R | W | S | Y | A |

Note: AR30V5L type: Red, yellow only

**•Contact arrangements**

Contact arrangements other than above are available

| Contact arrangement | 1NO | 1NC | 1NO+1NC | 2NO | 2NC | 3NO |
|---|---|---|---|---|---|---|
| Code | 10 | 01 | 11 | 20 | 02 | 30 |

| Contact arrangement | 3NC | 2NO+2NC | 4NO | 4NC | 5NO | 5NC | 3NO+3NC |
|---|---|---|---|---|---|---|---|
| Code | 03 | 22 | 40 | 04 | 50 | 05 | 33 |

Note: AR30Q7L type: 1NO + 1NC only

Available numbers of contact blocks

| Operation | Without transformer | With transformer |
|---|---|---|
| Momentary action | 6-contact block | 4-contact block |
| Alternate action<br>Push-lock, turn-reset | 3-contact block | 2-contact block |

**•Voltage**

Replace the ■ mark by the lamp voltage code

| Transformer | | Code LED | Incandescent |
|---|---|---|---|
| Without transformer | 6V DC | 6 | — |
| | 6V AC | A | — |
| | 5.5V AC/DC | — | 5 |
| | 12V AC/DC | B | — |
| | 15V AC/DC | C | C |
| | 20V AC/DC | — | D |
| | 24V AC/DC | E | E |
| With transformer | 100-110V AC | H | H |
| | 115-127V AC | L | L |
| | 200-220V AC | M | M |
| | 230-254V AC | Q | Q |
| | 350-380V AC | S | S |
| | 400-440V AC | T | T |
| | 480V AC | V | V |
| | 500-550V AC | W | W |

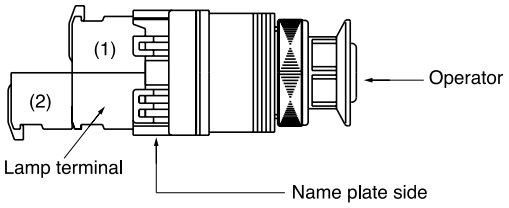
**•Contact operation (AR30Q7L)**

| Contact block | | Button position | | |
|---|---|---|---|---|
| No. | Type | Pull | Free | Push |
| (1) | NC | ● | | |
| (2) | NC | ▬ | | |

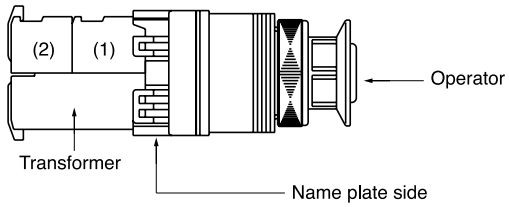
● Contact closed

**•Position of contact block**

AR30Q7L (without transformer)




AR30Q7L (with transformer)



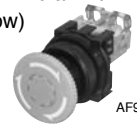
## ■ Pushbutton switches

| Operator | Contact | Momentary action Type | Alternate action Type |
|---|---|---|---|
| Flush round head AF95-11 | 1NO | **AR30F0R-10□** | **AR30F5R-10□** |
| | 1NC | **AR30F0R-01□** | **AR30F5R-01□** |
| | 1NO+1NC | **AR30F0R-11□** | **AR30F5R-11□** |
| | 2NO | **AR30F0R-20□** | **AR30F5R-20□** |
| | 2NC | **AR30F0R-02□** | **AR30F5R-02□** |
| | 2NO+2NC | **AR30F0R-22□** | **AR30F5R-22□** |
| Extended round head AF95-10 | 1NO | **AR30E0R-10□** | **AR30E5R-10□** |
| | 1NC | **AR30E0R-01□** | **AR30E5R-01□** |
| | 1NO+1NC | **AR30E0R-11□** | **AR30E5R-11□** |
| | 2NO | **AR30E0R-20□** | **AR30E5R-20□** |
| | 2NC | **AR30E0R-02□** | **AR30E5R-02□** |
| | 2NO+2NC | **AR30E0R-22□** | **AR30E5R-22□** |
| Flush round head symbol mark type AF98-195 | 1NO | **AR30FAR-10C■** | **AR30FBR-10C■** |
| | 1NC | **AR30FAR-01C■** | **AR30FBR-01C■** |
| | 1NO+1NC | **AR30FAR-11C■** | **AR30FBR-11C■** |
| | 2NO | **AR30FAR-20C■** | **AR30FBR-20C■** |
| | 2NC | **AR30FAR-02C■** | **AR30FBR-02C■** |
| | 2NO+2NC | **AR30FAR-22C■** | **AR30FBR-22C■** |
| Extended round head symbol mark type AF98-194 | 1NO | **AR30EAR-10C■** | **AR30EBR-10C■** |
| | 1NC | **AR30EAR-01C■** | **AR30EBR-01C■** |
| | 1NO+1NC | **AR30EAR-11C■** | **AR30EBR-11C■** |
| | 2NO | **AR30EAR-20C■** | **AR30EBR-20C■** |
| | 2NC | **AR30EAR-02C■** | **AR30EBR-02C■** |
| | 2NO+2NC | **AR30EAR-22C■** | **AR30EBR-22C■** |
| Mushroom head (40mm dia.) AF95-12 | 1NO | **AR30M0R-10□** | **AR30M5R-10□** |
| | 1NC | **AR30M0R-01□** | **AR30M5R-01□** |
| | 1NO+1NC | **AR30M0R-11□** | **AR30M5R-11□** |
| | 2NO | **AR30M0R-20□** | **AR30M5R-20□** |
| | 2NC | **AR30M0R-02□** | **AR30M5R-02□** |
| | 2NO+2NC | **AR30M0R-22□** | **AR30M5R-22□** |
| Mushroom head (29mm dia.) AF95-8 | 1NO | **AR30M4R-10□** | — |
| | 1NC | **AR30M4R-01□** | — |
| | 1NO+1NC | **AR30M4R-11□** | — |
| | 2NO | **AR30M4R-20□** | — |
| | 2NC | **AR30M4R-02□** | — |
| | 2NO+2NC | **AR30M4R-22□** | — |
| Extended with full guard (24mm dia.) AF95-16 | 1NO | **AR30G1R-10□** | **AR30G6R-10□** |
| | 1NC | **AR30G1R-01□** | **AR30G6R-01□** |
| | 1NO+1NC | **AR30G1R-11□** | **AR30G6R-11□** |
| | 2NO | **AR30G1R-20□** | **AR30G6R-20□** |
| | 2NC | **AR30G1R-02□** | **AR30G6R-02□** |
| | 2NO+2NC | **AR30G1R-22□** | **AR30G8R-22□** |

Note: ■ □ *See page 74*

| Operator | Contact | Momentary action Type | Alternate action Type |
|---|---|---|---|
| Extended with half guard AF95-9 | 1NO | **AR30G0R-10□** | **AR30G5R-10□** |
| | 1NC | **AR30G0R-01□** | **AR30G5R-01□** |
| | 1NO+1NC | **AR30G0R-11□** | **AR30G5R-11□** |
| | 2NO | **AR30G0R-20□** | **AR30G5R-20□** |
| | 2NC | **AR30G0R-02□** | **AR30G5R-02□** |
| | 2NO+2NC | **AR30G0R-22□** | **AR30G5R-22□** |
| Pin lock AF96-240 | 1NO | **AR30GPR-10□** | — |
| | 1NC | **AR30GPR-01□** | — |
| | 1NO+1NC | **AR30GPR-11□** | — |
| | 2NO | **AR30GPR-20□** | — |
| | 2NC | **AR30GPR-02□** | — |
| | 2NO+2NC | **AR30GPR-22□** | — |
| Mushroom head with full guard (40mm dia.) AF95-17 | 1NO | **AR30M3R-10□** | **AR30M8R-10□** |
| | 1NC | **AR30M3R-01□** | **AR30M8R-01□** |
| | 1NO+1NC | **AR30M3R-11□** | **AR30M8R-11□** |
| | 2NO | **AR30M3R-20□** | **AR30M8R-20□** |
| | 2NC | **AR30M3R-02□** | **AR30M8R-02□** |
| | 2NO+2NC | **AR30M3R-22□** | **AR30M8R-22□** |
| Mushroom head with full guard (35mm dia. metal nut) AF96-239 | 1NO | **AR30GSR-10□** | — |
| | 1NC | **AR30GSR-01□** | — |
| | 1NO+1NC | **AR30GSR-11□** | — |
| | 2NO | **AR30GSR-20□** | — |
| | 2NC | **AR30GSR-02□** | — |
| | 2NO+2NC | **AR30GSR-22□** | — |
| Giant head AF95-579 | 1NO | **AR30B0R-10□** | — |
| | 1NC | **AR30B0R-01□** | — |
| | 1NO+1NC | **AR30B0R-11□** | — |
| | 2NO | **AR30B0R-20□** | — |
| | 2NC | **AR30B0R-02□** | — |
| | 2NO+2NC | **AR30B0R-22□** | — |
| Giant head with guard AF95-582 | 1NO | **AR30B1R-10□** | — |
| | 1NC | **AR30B1R-01□** | — |
| | 1NO+1NC | **AR30B1R-11□** | — |
| | 2NO | **AR30B1R-20□** | — |
| | 2NC | **AR30B1R-02□** | — |
| | 2NO+2NC | **AR30B1R-22□** | — |
| Giant head with full guard AF95-580 | 1NO | **AR30B2R-10□** | — |
| | 1NC | **AR30B2R-01□** | — |
| | 1NO+1NC | **AR30B2R-11□** | — |
| | 2NO | **AR30B2R-20□** | — |
| | 2NC | **AR30B2R-02□** | — |
| | 2NO+2NC | **AR30B2R-22□** | — |

| Operator | Contact | Momentary action Type | Alternate action Type |
|---|---|---|---|
| Giant head with full guard AF95-581 | 1NO | **AR30B3R-10□** | — |
| | 1NC | **AR30B3R-01□** | — |
| | 1NO+1NC | **AR30B3R-11□** | — |
| | 2NO | **AR30B3R-20□** | — |
| | 2NC | **AR30B3R-02□** | — |
| | 2NO+2NC | **AR30B3R-22□** | — |
| Push, turn-lock AF95-583 | 1NO | **AR30N0R-10□** | — |
| | 1NC | **AR30N0R-01□** | — |
| | 1NO+1NC | **AR30N0R-11□** | — |
| | 2NO | **AR30N0R-20□** | — |
| | 2NC | **AR30N0R-02□** | — |
| | 2NO+2NC | **AR30N0R-22□** | — |

| Operator | Contact | Momentary action Type | Alternate action Type |
|---|---|---|---|
| Push-lock, turn-reset (40mm dia. with white arrow)  AF97-69 | 1NO | — | **AR30V5R-10□** |
| | 1NC | — | **AR30V5R-01□** |
| | 1NO+1NC | — | **AR30V5R-11□** |
| | 2NO | — | **AR30V5R-20□** |
| | 2NC | — | **AR30V5R-02□** |
| | 2NO+2NC | — | **AR30V5R-22□** |
| Pushbutton with emergency operating cap AF96-187 | 1NO | **AR30FVR-10□** | — |
| | 1NC | **AR30FVR-01□** | — |
| | 1NO+1NC | **AR30FVR-11□** | — |
| | 2NO | **AR30FVR-20□** | — |
| | 2NC | **AR30FVR-02□** | — |
| | 2NO+2NC | **AR30FVR-22□** | — |

**•Button color**

Replace the □ mark by the button color code

| Color | Green | Red | White | Blue | Yellow | Orange | Black |
|---|---|---|---|---|---|---|---|
| Code | G | R | W | S | Y | A | B |

Note: AR30V5R type: Red, yellow, black only

**•Available numbers of contact blocks**

| Momentary action | Alternate action Push-lock, turn-reset |
|---|---|
| 8-contact block | 4-contact block |

**•Contact arrangements**

Contact arrangements other than above are available

| Contact arrangement | 1NO | 1NC | 1NO+1NC | 2NO | 2NC | 3NO | 3NC |
|---|---|---|---|---|---|---|---|
| Code | 10 | 01 | 11 | 20 | 02 | 30 | 03 |

| Contact arrangement | 2NO+2NC | 4NO | 4NC | 5NO | 5NC | 3NO+3NC | 4NO+4NC |
|---|---|---|---|---|---|---|---|
| Code | 22 | 40 | 04 | 50 | 05 | 33 | 44 |

**•Symbol mark** (For AR30FAR, FBR, EAR, EBR)

Replace the ■ mark by the symbol mark code

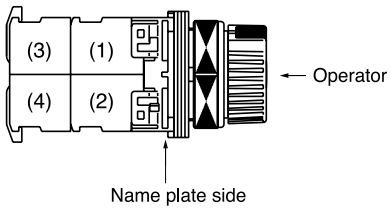
| Symbol mark | ◯ | | I | | Ⓣ | | ◯ | I | Ⓣ |
|---|---|---|---|---|---|---|---|---|---|
| Color of button | White | Black | White | Black | White | Black | Clear | | |
| Color of mark | Red | | Green | | Green | | Black | | |
| Code | 01 | 02 | 03 | 04 | 11 | 12 | 02B | 04B | 12B |

| Operator | Contact (The following contact is only available.) | Button color | Type | Contact operation | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Contact block | | Left | | Right | |
| | | | | Mounting position | Type | Free | Depressed | Free | Depressed |
| Pushbutton with selector ring (2-position) AF97-506 | 2NO+2NC | Green<br>Red<br>Black<br>White<br>Yellow<br>Orange<br>Blue | **AR30S1R-22G**<br>**AR30S1R-22R**<br>**AR30S1R-22B**<br>**AR30S1R-22W**<br>**AR30S1R-22Y**<br>**AR30S1R-22A**<br>**AR30S1R-22S** | (1) | NC | – | – | ● | – |
| | | | | (2) | NC | – | – | ● | – |
| | | | | (3) | NO | – | ● | – | ● |
| | | | | (4) | NO | – | ● | – | ● |
| | 2NO | Green<br>Red<br>Black<br>White<br>Yellow<br>Orange<br>Blue | **AR30S2R-20G**<br>**AR30S2R-20R**<br>**AR30S2R-20B**<br>**AR30S2R-20W**<br>**AR30S2R-20Y**<br>**AR30S2R-20A**<br>**AR30S2R-20S** | (1) | NO | – | ● | – | – |
| | | | | (2) | NO | – | – | – | ● |
| | | | | | | | | | |
| | 2NO+2NC | Green<br>Red<br>Black<br>White<br>Yellow<br>Orange<br>Blue | **AR30S2R-22G**<br>**AR30S2R-22R**<br>**AR30S2R-22B**<br>**AR30S2R-22W**<br>**AR30S2R-22Y**<br>**AR30S2R-22A**<br>**AR30S2R-22S** | (1) | NC | ● | – | ▬ | |
| | | | | (2) | NC | ▬ | | ● | – |
| | | | | (3) | NO | – | ● | – | – |
| | | | | (4) | NO | – | – | – | ● |
| | 2NO+2NC | Green<br>Red<br>Black<br>White<br>Yellow<br>Orange<br>Blue | **AR30S3R-22G**<br>**AR30S3R-22R**<br>**AR30S3R-22B**<br>**AR30S3R-22W**<br>**AR30S3R-22Y**<br>**AR30S3R-22A**<br>**AR30S3R-22S** | (1) | NC | – | – | ▬ | |
| | | | | (2) | NC | ▬ | | – | – |
| | | | | (3) | NO | – | ● | – | – |
| | | | | (4) | NO | – | – | – | ● |
| | 2NO+2NC | Green<br>Red<br>Black<br>White<br>Yellow<br>Orange<br>Blue | **AR30S6R-22G**<br>**AR30S6R-22R**<br>**AR30S6R-22B**<br>**AR30S6R-22W**<br>**AR30S6R-22Y**<br>**AR30S6R-22A**<br>**AR30S6R-22S** | (1) | NC | ● | – | – | Locked |
| | | | | (2) | NC | ● | – | – | |
| | | | | (3) | NO | – | ● | ● | |
| | | | | (4) | NO | – | ● | ● | |

Note: (1) to (4): Contact block mounting position

● Contact closed
– Contact open

### •Position of contact block




Notes: Contact block color
NC: red
NO: blue

### ■ Emergency stop pushbutton switches

⊖ (Direct opening action), conform to EN418

| Operator | Contact | Type |
|---|---|---|
| Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) AF97-69 | 1NC<br>1NO+1NC<br>2NC<br>1NO+3NC<br>2NO+2NC | **AR30V0R-01R**<br>**AR30V0R-11R**<br>**AR30V0R-02R**<br>**AR30V0R-13R**<br>**AR30V0R-22R** |
| Push-lock, turn-reset (40mm dia.) AF95-176 | 1NC<br>1NO+1NC<br>2NC<br>1NO+3NC<br>2NO+2NC | **AR30V2R-01R**<br>**AR30V2R-11R**<br>**AR30V2R-02R**<br>**AR30V2R-13R**<br>**AR30V2R-22R** |
| Push-lock, turn-reset (Soft-touch 65mm dia. with white arrow) AF97-68 | 1NC<br>1NO+1NC<br>2NC<br>1NO+3NC<br>2NO+2NC | **AR30V1R-01R**<br>**AR30V1R-11R**<br>**AR30V1R-02R**<br>**AR30V1R-13R**<br>**AR30V1R-22R** |
| Push-lock, pull-reset (35mm dia.) AF95-3 | 1NC<br>1NO+1NC<br>2NC | **AR30Q2R-01R**<br>**AR30Q2R-11R**<br>**AR30Q2R-02R** |

Note: Button color: Red only

### •Contact arrangements

Contact arrangements other than above are available

| Contact arrangement | 1NO | 1NO+1NC | 2NC | 3NC | 2NO+2NC | 4NC | 1NO+3NC |
|---|---|---|---|---|---|---|---|
| Code | 01 | 11 | 02 | 03 | 22 | 04 | 13 |

Notes: • Except AR30Q2R
• For push-lock, pull-reset type, up to 2-contact block.

### ■ Emergency stop illuminated pushbutton switches

⊖ (Direct opening action), conform to EN418

| Operator | Transformer | Contact | LED lamp Type | Incandescent lamp Type |
|---|---|---|---|---|
| Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) AF97-75 | Without | 1NC | **AR30V0L-01■3R** | **AR30V0L-01■4R** |
| | | 1NO+1NC | **AR30V0L-11■3R** | **AR30V0L-11■4R** |
| | | 2NC | **AR30V0L-02■3R** | **AR30V0L-02■4R** |
| | | 1NO+2NC | **AR30V0L-12■3R** | **AR30V0L-12■4R** |
| | | 3NC | **AR30V0L-03■3R** | **AR30V0L-03■4R** |
| | With | 1NC | **AR30V0L-01■3R** | **AR30V0L-01■4R** |
| | | 1NO+1NC | **AR30V0L-11■3R** | **AR30V0L-11■4R** |
| | | 2NC | **AR30V0L-02■3R** | **AR30V0L-02■4R** |
| Push-lock, turn-reset (40mm dia.) AF95-2 | Without | 1NC | **AR30V2L-01■3R** | **AR30V2L-01■4R** |
| | | 1NO+1NC | **AR30V2L-11■3R** | **AR30V2L-11■4R** |
| | | 2NC | **AR30V2L-02■3R** | **AR30V2L-02■4R** |
| | | 3NC | **AR30V2L-03■3R** | **AR30V2L-03■4R** |
| | With | 1NC | **AR30V2L-01■3R** | **AR30V2L-01■4R** |
| | | 1NO+1NC | **AR30V2L-11■3R** | **AR30V2L-11■4R** |
| | | 2NC | **AR30V2L-02■3R** | **AR30V2L-02■4R** |

Notes: • Button color: Red only
• Contact arrangements indicated in the table can be supplied.

### •Voltage

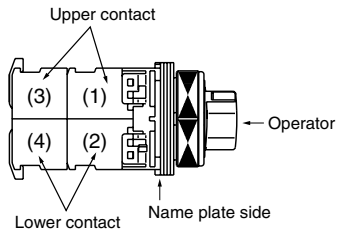
Replace the ■ mark by the lamp voltage code

| Transformer | | Code LED | Code Incandescent |
|---|---|---|---|
| Without | 6V DC | 6 | — |
| | 6V AC | A | — |
| | 5V AC/DC | — | 5 |
| | 12V AC/DC | B | — |
| | 15V AC/DC | C | C |
| | 20V AC/DC | — | D |
| | 24V AC/DC | E | E |

| Transformer | | Code LED | Code Incandescent |
|---|---|---|---|
| With | 100-110V AC | H | H |
| | 115-127V AC | L | L |
| | 200-220V AC | M | M |
| | 230-254V AC | Q | Q |
| | 350-380V AC | S | S |
| | 400-440V AC | T | T |
| | 480V AC | V | V |
| | 500-550V AC | W | W |

## ■ Selector switches
### 2-position

| Operator | Operation | Knob color or key removable position | Contact | Type Switch with round bezel | Contact operation (Example) | |
|---|---|---|---|---|---|---|
| | | | | | Contact arrangement | Operator position (Left ↖ / Right ↗) |
| Knob AF95-13 | Maintained each 90° | Color code: B: Black (Standard) Color other than above are available (G: Green R: Red) | 1NO<br>1NC<br>1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR30PR-210B**<br>**AR30PR-201B**<br>**AR30PR-211B**<br>**AR30PR-220B**<br>**AR30PR-202B**<br>**AR30PR-222B** | 1NO (1) | Upper contact ③ ④ |
| | Spring return ↖ 60° | | 1NO<br>1NC<br>1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR30PR-010B**<br>**AR30PR-001B**<br>**AR30PR-011B**<br>**AR30PR-020B**<br>**AR30PR-002B**<br>**AR30PR-022B** | 1NC (1) | Upper contact ① ② |
| Lever AF95-14 | Maintained each 90° | | 1NO<br>1NC<br>1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR30WR-210B**<br>**AR30WR-201B**<br>**AR30WR-211B**<br>**AR30WR-220B**<br>**AR30WR-202B**<br>**AR30WR-222B** | 1NO+1NC (1)<br>(2) | Upper contact ③ ④<br>Lower contact ① ② |
| | Spring return ↖ 60° | | 1NO<br>1NC<br>1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR30WR-010B**<br>**AR30WR-001B**<br>**AR30WR-011B**<br>**AR30WR-020B**<br>**AR30WR-002B**<br>**AR30WR-022B** | 2NO+2NC (1)<br>(3)<br>(2)<br>(4) | Upper contact ③ ④ ③ ④<br>Lower contact ① ② ① ② |
| Key AF95-15 | Maintained each 90° | ■: Key removable position ( ): Key type *See page 04/83* | 1NO<br>1NC<br>1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR30J□R-2■10( )**<br>**AR30J□R-2■01( )**<br>**AR30J□R-2■11( )**<br>**AR30J□R-2■20( )**<br>**AR30J□R-2■02( )**<br>**AR30J□R-2■22( )** | | |
| | Spring return ↖ 60° | | 1NO<br>1NC<br>1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR30J□R-0A10( )**<br>**AR30J□R-0A01( )**<br>**AR30J□R-0A11( )**<br>**AR30J□R-0A20( )**<br>**AR30J□R-0A02( )**<br>**AR30J□R-0A22( )** | | |




● Contact closed

Notes: • (1) to (4): Contact block mounting position
• ①– ②, ③– ④: Contact block terminal No.
• Contact arrangements: *See page 80*

**• Operator**
Replace the □ mark by the cylinder key type code
Standard type: Blank
Long durability type: A

### 3-position

| Operator | Operation | Knob color | Contact | Type Switch with round bezel | Contact operation (Example) | | |
|---|---|---|---|---|---|---|---|
| | | | | | Contact arrange-ment | Operation position | |
| | | | | | | L C R | L C R |
| Knob | Maintained each 45° | Color code: B: Black (Standard) Color other than above are available (G: Green R: Red) | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR30PR-311B**<br>**AR30PR-320B**<br>**AR30PR-302B**<br>**AR30PR-322B** | 1NO+1NC<br>(1) (2) | Upper contact<br>③ ④ | Lower contact<br>① ② |
| | Spring/manual return each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR30PR-611B**<br>**AR30PR-620B**<br>**AR30PR-602B**<br>**AR30PR-622B** | | | |
| | Spring/manual return each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR30PR-711B**<br>**AR30PR-720B**<br>**AR30PR-702B**<br>**AR30PR-722B** | 1NO+1NC<br>(1) (2) | Upper contact<br>③ ④ | Lower contact<br>① ② |
| AF95-13 | Spring return each 45° | | 2NO+2NC | **AR30PR-122B** | 2NO+2NC<br>(1) (2)<br>(3) (4) | Upper contact<br>① ②<br>③ ④ | Lower contact<br>① ②<br>③ ④ |
| Lever | Maintained each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR30WR-311B**<br>**AR30WR-320B**<br>**AR30WR-302B**<br>**AR30WR-322B** | 1NO+1NC<br>(1) (2) | Upper contact<br>③ ④ | Lower contact<br>① ② |
| | Spring/manual return each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR30WR-611B**<br>**AR30WR-620B**<br>**AR30WR-602B**<br>**AR30WR-622B** | | | |
| | Spring/manual return each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR30WR-711B**<br>**AR30WR-720B**<br>**AR30WR-702B**<br>**AR30WR-722B** | 1NO+1NC<br>(1) (2) | Upper contact<br>③ ④ | Lower contact<br>① ② |
| AF95-14 | Spring return each 45° | | 2NO+2NC | **AR30WR-122B** | 2NO+2NC<br>(1) (2)<br>(3) (4) | Upper contact<br>① ②<br>③ ④ | Lower contact<br>① ②<br>③ ④ |

Note: • Contact arrangements: *See page 80*

● Contact closed

| Operator | Operation | Key removable position | Contact | Type Switch with round bezel | Contact operation (Example) | | |
|---|---|---|---|---|---|---|---|
| | | | | | Contact arrangement | Operator position L C R | Operator position L C R |
| Key AF95-15 | Maintained each 45° | ■: Key removable position ( ): Key type | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR30J□R-3■11( )**<br>**AR30J□R-3■20( )**<br>**AR30J□R-3■02( )**<br>**AR30J□R-3■22( )** | 1NO+1NC (1) (2) | Upper contact ③ ④ | Lower contact ① ② |
| | Spring/manual return each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR30J□R-6■11( )**<br>**AR30J□R-6■20( )**<br>**AR30J□R-6■02( )**<br>**AR30J□R-6■22( )** | | | |
| | Spring/manual return each 45° | | 1NO+1NC<br>2NO<br>2NC<br>2NO+2NC | **AR30J□R-7■11( )**<br>**AR30J□R-7■20( )**<br>**AR30J□R-7■02( )**<br>**AR30J□R-7■22( )** | 1NO+1NC (1) (2) | Upper contact ③ ④ | Lower contact ① ② |
| | Spring return each 45° | | 2NO+2NC | **AR30J□R-1E22( )** | 2NO+2NC (1) (2) | Upper contact ① ② | Lower contact ① ② |
| | | | | | (3) (4) | ③ ④ | ③ ④ |

● Contact closed

Notes:• Operator position L: Left, C: Center, R: Right
• (1) to (4): Contact block mounting position
• ① – ②, ③ – ④: Contact block terminal No.

### •Contact arrangements

Contact arrangements other than above are available

| Contact arrangement | 1NO | 1NC | 1NO+1NC | 2NO | 2NC | 3NO | 3NC |
|---|---|---|---|---|---|---|---|
| Code | 10 | 01 | 11 | 20 | 02 | 30 | 03 |

| Contact arrangement | 2NO+2NC | 4NO | 4NC | 5NO | 5NC | 3NO+3NC | 4NO+4NC |
|---|---|---|---|---|---|---|---|
| Code | 22 | 40 | 04 | 50 | 05 | 33 | 44 |

### •Available numbers of contact blocks

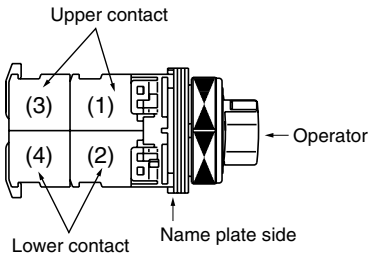
| Mainted | Spring return<br>Spring/manual return |
|---|---|
| 8-contact block | 4-contact block |

### • Key removable positions

| Code | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| Removable position | 45° 45° | 45° 45° | 45° 45° | 45° 45° | 45° 45° | 45° 45° | 45° 45° |
| AR30J□R-2 | ● | ● | – | ● | – | – | – |
| AR30J□R-0 | ● | – | – | – | – | – | – |
| AR30J□R-3 | ● | ● | ● | ● | ● | ● | ● |
| AR30J□R-6 | – | – | – | ● | ● | ● | – |
| AR30J□R-7 | ● | – | – | – | ● | – | ● |
| AR30J□R-1 | – | – | – | – | ● | – | – |

●: Available –: Not available

### • Position of contact block




### • Key code No.

Replace the ( ) mark with one of the following key code.
A, B, C, D, E and F
Standard key code is A.

### • Operator

Replace the □ mark by the cylinder key type code
Standard type: Blank
Long durability type: A

## ■ Selector switches (control type)

### 3-position

| Operator | Operation | Knob color or key removable position | Contact arrangement | Type Switch with round bezel |
|---|---|---|---|---|
| Knob AF95-475 | Maintained each 45° | Color code: B: Black (Standard) Color other than above are available (G: Green R: Red) | Replace the ■ mark by the contact arrangement code (shown on next page). | **AR30PCR-3■B** |
| | Spring/manual return each 45° | | | **AR30PCR-6■B** |
| | Spring/manual return each 45° | | | **AR30PCR-7■B** |
| | Spring return each 45° | | | **AR30PCR-1■B** |
| Lever KK02-140A | Maintained each 45° | | Replace the ■ mark by the contact arrangement code (shown on next page). | **AR30WCR-3■B** |
| | Spring/manual return each 45° | | | **AR30WCR-6■B** |
| | Spring/manual return each 45° | | | **AR30WCR-7■B** |
| | Spring return each 45° | | | **AR30WCR-1■B** |
| Key AF95-474 | Maintained each 45° | Replace the □ mark by the key removable position code: A, B, C, D, E F or G | Replace the ■ mark by the contact arrangement code (shown on next page). | **AR30JCR-3□■( )** |
| | Spring/manual return each 45° | | | **AR30JCR-6□■( )** |
| | Spring/manual return each 45° | | | **AR30JCR-7□■( )** |
| | Spring return each 45° | | | **AR30JCR-1E■( )** |

### • Key removable positions

| Code | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| Removable position | | | | | | | |
| AR30JCR-3 | ● | ● | ● | ● | ● | ● | ● |
| AR30JCR-6 | – | – | – | ● | ● | ● | – |
| AR30JCR-7 | ● | – | – | – | ● | – | ● |
| AR30JCR-1 | – | – | – | – | ● | – | – |

●: Available –: Not available

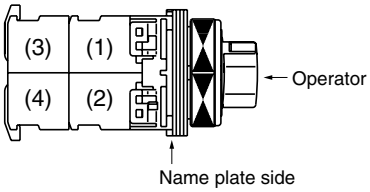
**•Key code No.**
Replace the ( ) mark with one of the following key code.
A, B, C, D, E and F
Standard key code is A.

### • Contact arrangement code (Typical example)

| Contact arrangement | Contact arrangement code | Contact operation: Contact block: Mounting position | Contact block: Type | Operator position: Left | Center | Right |
|---|---|---|---|---|---|---|
| 2NC | 01F | (1) | NC | ▬ | ▬ | |
| | | (2) | NC | | ▬ | ▬ |
| | | – | – | – | – | – |
| | | – | – | – | – | – |
| 2NO+2NC | 014 | (1) | NC | ▬ | ▬ | |
| | | (2) | NC | | ▬ | ▬ |
| | | (3) | NO | | | ● |
| | | (4) | NO | ● | | |
| 4NC | 01J | (1) | NC | ▬ | ▬ | |
| | | (2) | NC | | ▬ | ▬ |
| | | (3) | NC | ▬ | ▬ | |
| | | (4) | NC | | ▬ | ▬ |
| 2NO+2NC | 024 | (1) | NC | ▬ | ▬ | |
| | | (2) | NC | | ● | |
| | | (3) | NO | | | ● |
| | | (4) | NO | ● | | ● |
| 2NO+2NC | 03C* (Maintained only) | (1) | NC | ▬ | ▬ | |
| | | (2) | NC | | | ● |
| | | (3) | NO | | | ● |
| | | (4) | NO | ● | | |
| 2NO+2NC | 044* | (1) | NC | ▬ | ▬ | |
| | | (2) | NC | | ● | |
| | | (3) | NO | | | ● |
| | | (4) | NO | ● | | |
| 2NO+2NC | 054 | (1) | NC | ▬ | ▬ | |
| | | (2) | NC | | ● | |
| | | (3) | NO | | | ● |
| | | (4) | NO | | | ● |
| 2NO+2NC | 064 | (1) | NC | | ▬ | ▬ |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | |
| | | (4) | NO | ● | | ● |
| 1NO+1NC | 07F | (1) | NC | | ▬ | ▬ |
| | | (2) | NO | | | ● |
| | | – | – | – | – | – |
| | | – | – | – | – | – |
| 2NO+2NC | 07C* (Maintained only) | (1) | NC | | ▬ | ▬ |
| | | (2) | NC | | | ● |
| | | (3) | NO | ● | | |
| | | (4) | NO | ● | | |
| 2NO+2NC | 084 | (1) | NC | | ▬ | ▬ |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | |
| | | (4) | NO | ● | | |
| 2NO+2NC | 094* | (1) | NC | | ▬ | ▬ |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | |
| | | (4) | NO | | | ● |
| 2NO+2NC | 104 | (1) | NC | | ● | |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | ● |
| | | (4) | NO | ● | | ● |
| 2NO+2NC | 11C* (Maintained only) | (1) | NC | | ● | |
| | | (2) | NC | | | ● |
| | | (3) | NO | ● | | ● |
| | | (4) | NO | ● | | |

Notes: ●: Contact closed  Blank: Contact open
* There may be some overlap in the contact when switching between notches.

### • Position of contact block



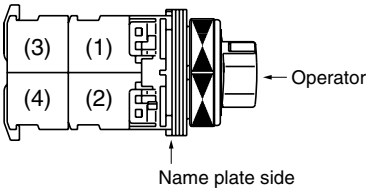
- **Contact arrangement code (Typical example)**

| Contact arrangement | Contact arrangement code | Contact operation | | | | |
|---|---|---|---|---|---|---|
| | | Contact block | | Operator position | | |
| | | Mounting position | Type | Left | Center | Right |
| 2NO+2NC | 124* | (1) | NC | | ● | |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | ● |
| | | (4) | NO | ● | | |
| 2NO+2NC | 134* | (1) | NC | | ● | |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | ● |
| | | (4) | NO | | | ● |
| 3NO+1NC | 14D* (Maintained only) | (1) | NO | ● | | |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | |
| | | (4) | NO | | | ● |
| 3NO+1NC | 15A* | (1) | NO | | | ● |
| | | (2) | NC | | ● | |
| | | (3) | NO | | | ● |
| | | (4) | NO | ● | | |
| 2NO+2NC | 164 | (1) | NC | | ● | |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | |
| | | (4) | NO | ● | | |
| 2NO+2NC | 174* | (1) | NC | | ● | |
| | | (2) | NC | | ● | |
| | | (3) | NO | ● | | |
| | | (4) | NO | | | ● |
| 2NO+2NC | 184 | (1) | NC | | ● | |
| | | (2) | NC | | ● | |
| | | (3) | NO | | | ● |
| | | (4) | NO | | | ● |

| Contact arrangement | Contact arrangement code | Contact operation | | | | |
|---|---|---|---|---|---|---|
| | | Contact block | | Operator position | | |
| | | Mounting position | Type | Left | Center | Right |
| 2NO+2NC | 194 | (1) | NC | | ▬ | ▬ |
| | | (2) | NC | ▬ | ▬ | |
| | | (3) | NO | ● | | |
| | | (4) | NO | | | ● |
| 4NO | 20B | (1) | NO | | | ● |
| | | (2) | NO | ● | | |
| | | (3) | NO | | | ● |
| | | (4) | NO | ● | | |

Notes: ●: Contact closed  Blank: Contact open
* There may be some overlap in the contact when switching between notches.

- **Position of contact block**



### 4, 5-position

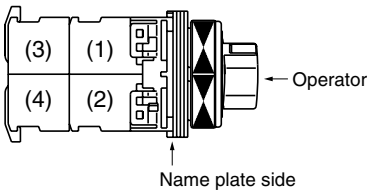
| Operator | Contact (The following contact is only available.) | Operation | Knob color | Contact arrangement | Type Switch with round bezel |
|---|---|---|---|---|---|
| Knob AF95-475 | 2NO+2NC | 4-position maintained | Color code: B: Black (Standard) Color other than above are available (G: Green R: Red) | Replace the ■ mark by the contact arrangement code (shown below) | **AR30PCR-4■B** |
| | | 5-position maintained | | | **AR30PCR-5■B** |
| Lever KK02-140A | 2NO+2NC | 4-position maintained | | | **AR30WCR-4■B** |
| | | 5-position maintained | | | **AR30WCR-5■B** |

### ● Contact arrangement code

| Position | Contact arrangement | Contact arrangement code | Contact operation: Contact block: Mounting position | Type | Operator position 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|
| 4-position | 2NO+2NC | 41C* (Maintained only) | (1) | NC | | | ● | | |
| | | | (2) | NC | ● | | | | |
| | | | (3) | NO | | ● | | | |
| | | | (4) | NO | | | | ● | |
| 5-position | 2NO+2NC | 51C* (Maintained only) | (1) | NC | | | | ● | |
| | | | (2) | NC | | ● | | | |
| | | | (3) | NO | ● | | | | |
| | | | (4) | NO | | | | | ● |

Notes: ●: Contact closed
* There may be some overlap in the contact when switching between notches.

### • Position of contact block




### Operator position

**4-position** **5-position**

## ■ Illuminated selector switches

### 2-position

| Operator | Operation | Contact | LED lamp | | Incandescent lamp | |
|---|---|---|---|---|---|---|
| | | | Transformer | Type | Transformer | Type |
| Knob | Maintained | 1NO<br>1NC<br>1NO+1NC<br>2NO+2NC | Without | **AR30PL-210■3□**<br>**AR30PL-201■3□**<br>**AR30PL-211■3□**<br>**AR30PL-222■3□** | Without | **AR30PL-210■4□**<br>**AR30PL-201■4□**<br>**AR30PL-211■4□**<br>**AR30PL-222■4□** |
| | each 90° | 1NO<br>1NC<br>1NO+1NC<br>2NO | With | **AR30PL-210■3□**<br>**AR30PL-201■3□**<br>**AR30PL-211■3□**<br>**AR30PL-220■3□** | With | **AR30PL-210■4□**<br>**AR30PL-201■4□**<br>**AR30PL-211■4□**<br>**AR30PL-220■4□** |
| | Spring return | 1NO<br>1NC<br>1NO+1NC<br>2NO | Without | **AR30PL-010■3□**<br>**AR30PL-001■3□**<br>**AR30PL-011■3□**<br>**AR30PL-020■3□** | Without | **AR30PL-010■4□**<br>**AR30PL-001■4□**<br>**AR30PL-011■4□**<br>**AR30PL-020■4□** |
| AF95-5 | 60° | 1NO<br>1NC<br>1NO+1NC<br>2NO | With | **AR30PL-010■3□**<br>**AR30PL-001■3□**<br>**AR30PL-011■3□**<br>**AR30PL-020■3□** | With | **AR30PL-010■4□**<br>**AR30PL-001■4□**<br>**AR30PL-011■4□**<br>**AR30PL-020■4□** |

### 3-position

| Operator | Operation | | Contact | LED lamp | | Incandescent lamp | |
|---|---|---|---|---|---|---|---|
| | | | | Transformer | Type | Transformer | Type |
| Knob | Maintained | | 1NO+1NC<br>2NO+2NC | Without | **AR30PL-311■3□**<br>**AR30PL-322■3□** | Without | **AR30PL-311■4□**<br>**AR30PL-322■4□** |
| | each 45° | | 1NO+1NC | With | **AR30PL-311■3□** | With | **AR30PL-311■4□** |
| | Spring/manual return | | 1NO+1NC<br>1NO+1NC | Without<br>With | **AR30PL-611■3□**<br>**AR30PL-611■3□** | Without<br>With | **AR30PL-611■4□**<br>**AR30PL-611■4□** |
| AF95-5 | each 45° | | 1NO+1NC<br>1NO+1NC | Without<br>With | **AR30PL-711■3□**<br>**AR30PL-711■3□** | Without<br>With | **AR30PL-711■4□**<br>**AR30PL-711■4□** |

Note: □, ■ *See page 86*

• Replace the ■ mark by the following lamp voltage code

| Transformer | Voltage | Code LED | Incandescent |
|---|---|---|---|
| Without | 5V AC/DC | – | 5 |
| | 6V DC | 6 | – |
| | 6V AC | A | – |
| | 12V AC/DC | B | – |
| | 15V AC/DC | C | C |
| | 20V AC/DC | – | D |
| | 24V AC/DC | E | E |
| With | 100-110V AC | H | H |
| | 115-127V AC | L | L |
| | 200-220V AC | M | M |
| | 230-254V AC | Q | Q |
| | 350-380V AC | S | S |
| | 400-440V AC | T | T |
| | 480V AC | V | V |
| | 500-550V AC | W | W |

• Replace the □ mark by the following knob color code

| Color | Green | Red | White | Blue | Yellow | Orange |
|---|---|---|---|---|---|---|
| Code | G | R | W | S | Y | A |

• Up to 4-contact of contact arrangement can be made.
Available numbers of contacts are as follow.

| No. of position | Operation | Without transformer | With transformer |
|---|---|---|---|
| 2-position | Maintained | 6-contact | 4-contact |
| | Spring return | 3-contact | 2-contact |
| 3-position | Maintained | 6-contact | 4-contact |
| | Spring/manual return | 3-contact | 2-contact |

## ● Contact arrangement and operator position

2-position

| Transformer | Contact arrangement | Contact block | | Operator position | |
|---|---|---|---|---|---|
| | | Mounting position | Type | Left | Right |
| With/without | 1NO | (1) | NO | – | ● |
| With/without | 1NC | (1) | NC | ● | – |
| Without | 1NO+1NC | (1) | NO | – | ● |
| | | (2) | NC | ● | – |
| With | 1NO+1NC | (1) | NC | ● | – |
| | | (2) | NO | – | ● |
| With/without | 2NO | (1) | NO | – | ● |
| | | (2) | NO | – | ● |
| Without | 2NO+2NC *1 | (1) | NO | – | ● |
| | | (2) | NC | ● | – |
| | | (3) | NO | – | ● |
| | | (4) | NC | ● | – |
| With | 2NO+2NC *1 | (1) | NC | ● | – |
| | | (2) | NC | ● | – |
| | | (3) | NO | – | ● |
| | | (4) | NO | – | ● |

Notes: *1 : AR30PL-2
● : Contact closed, – : Contact open

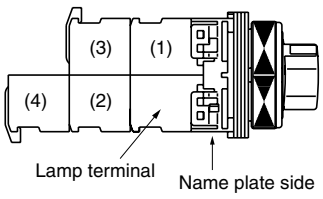
3-position

| Transformer | Contact arrangement | Contact block | | Operator position | | |
|---|---|---|---|---|---|---|
| | | Mounting position | Type | Left | Center | Right |
| Without | 1NO+1NC *1 | (1) | NO | ● | – | – |
| | | (2) | NC | – | – | ● |
| | 1NO+1NC *2 | (1) | NO | – | – | ● |
| | | (2) | NC | ● | – | – |
| | 2NO+2NC *3 | (1) | NO | ● | – | – |
| | | (2) | NC | – | – | ● |
| | | (3) | NO | ● | – | – |
| | | (4) | NC | – | – | ● |
| With | 1NO+1NC *1 | (1) | NC | – | – | ● |
| | | (2) | NO | ● | – | – |
| | 1NO+1NC *2 | (1) | NC | ● | – | – |
| | | (2) | NO | – | – | ● |
| | 2NO+2NC *3 | (1) | NC | – | – | ● |
| | | (2) | NC | – | – | ● |
| | | (3) | NO | ● | – | – |
| | | (4) | NO | ● | – | – |

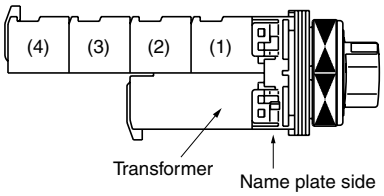
Notes: *1 : AR30PL-3, 6 *3 : AR30PL-3
*2 : AR30PL-7
● : Contact closed, – : Contact open

## ● Position of contact block

Without transformer




With transformer



## ■ Pilot lights/standard

| Lens | Transformer | LED lamp<br>Lamp voltage | Type | Incandescent lamp<br>Lamp voltage | Type |
|---|---|---|---|---|---|
| Dome<br> <br>AF95-18 | Without | 6V AC | **DR30D0L-A3□** | 5.5V AC/DC | **DR30D0L-54□** |
| | | 6V DC | **DR30D0L-63□** | — | — |
| | | 12V AC/DC | **DR30D0L-B3□** | 15V AC/DC | **DR30D0L-C4□** |
| | | 24V AC/DC | **DR30D0L-E3□** | 24V AC/DC | **DR30D0L-E4□** |
| | With | 100–110V AC | **DR30D0L-H3□** | 100–110V AC | **DR30D0L-H4□** |
| | | 200–220V AC | **DR30D0L-M3□** | 200–220V AC | **DR30D0L-M4□** |
| Dome<br> <br>AF97-674 | With resistor | 50V DC | **DR30D0L-FR□** | 50V DC | **DR30D0L-FQ□** |
| | | 110V DC | **DR30D0L-HR□** | — | — |
| | | 220V DC | **DR30D0L-MR□** | — | — |
| Dome<br> <br>AF97-672 | With resistor | — | — | 110V DC | **DR30D0L-HQ□** |
| | | — | — | 220V DC | **DR30D0L-MQ□** |
| Extended round<br> <br>AF95-20 | Without | 6V AC | **DR30E3L-A3□** | 5.5V AC/DC | **DR30E3L-54□** |
| | | 6V DC | **DR30E3L-63□** | — | — |
| | | 12V AC/DC | **DR30E3L-B3□** | 15V AC/DC | **DR30E3L-C4□** |
| | | 24V AC/DC | **DR30E3L-E3□** | 24V AC/DC | **DR30E3L-E4□** |
| | With | 100–110V AC | **DR30E3L-H3□** | 100–110V AC | **DR30E3L-H4□** |
| | | 200–220V AC | **DR30E3L-M3□** | 200–220V AC | **DR30E3L-M4□** |
| Faceted<br> <br>AF95-19 | Without | 6V AC | **DR30K0L-A3□** | 5.5V AC/DC | **DR30K0L-54□** |
| | | 6V DC | **DR30K0L-63□** | — | — |
| | | 12V AC/DC | **DR30K0L-B3□** | 15V AC/DC | **DR30K0L-C4□** |
| | | 24V AC/DC | **DR30K0L-E3□** | 24V AC/DC | **DR30K0L-E4□** |
| | With | 100–110V AC | **DR30K0L-H3□** | 100–110V AC | **DR30K0L-H4□** |
| | | 200–220V AC | **DR30K0L-M3□** | 200–220V AC | **DR30K0L-M4□** |
| Faceted<br> <br>AF97-673 | With resistor | 50V DC | **DR30K0L-FR□** | 50V DC | **DR30K0L-FQ□** |
| | | 110V DC | **DR30K0L-HR□** | — | — |
| | | 220V DC | **DR30K0L-MR□** | — | — |
| Faceted<br> <br>AF97-671 | With resistor | — | — | 110V DC | **DR30K0L-HQ□** |
| | | — | — | 220V DC | **DR30K0L-MQ□** |
| Dome with dimmer control<br> <br>KK02-144A | Without | 6V AC | **DR30D1L-A3□** | 5.5V AC/DC | **DR30D1L-54□** |
| | | 6V DC | **DR30D1L-63□** | — | — |
| | | 12V AC/DC | **DR30D1L-B3□** | — | — |
| | | 15V AC/DC | **DR30D1L-C3□** | 15V AC/DC | **DR30D1L-C4□** |
| | | 24V AC/DC | **DR30D1L-E3□** | 24V AC/DC | **DR30D1L-E4□** |
| | With | 100V–110V AC | **DR30D1L-H3□** | 100V–110V AC | **DR30D1L-H4□** |
| | | 200V–220V AC | **DR30D1L-M3□** | 200V–220V AC | **DR30D1L-M4□** |

Note: □ *See page 88*

### ■ Pilot lights/short-body with transformer

| Lens | LED lamp | | Incandescent lamp | |
|---|---|---|---|---|
| | Lamp voltage | Type | Lamp voltage | Type |
| Dome KK02-141A | 100–110V AC<br>200–220V AC<br>115–127V AC | **DR30D0L-H9□**<br>**DR30D0L-M9□**<br>**DR30D0L-L9□** | 100–110V AC<br>200–220V AC<br>115–127V AC | **DR30D0L-H8□**<br>**DR30D0L-M8□**<br>**DR30D0L-L8□** |
| Extended round KK02-142A | 100–110V AC<br>200–220V AC<br>115–127V AC | **DR30E3L-H9□**<br>**DR30E3L-M9□**<br>**DR30E0L-L9□** | 100–110V AC<br>200–220V AC<br>115–127V AC | **DR30E3L-H8□**<br>**DR30E3L-M8□**<br>**DR30E0L-L8□** |
| Faceted KK02-143A | 100–110V AC<br>200–220V AC<br>115–127V AC | **DR30K0L-H9□**<br>**DR30K0L-M9□**<br>**DR30K0L-L9□** | 100–110V AC<br>200–220V AC<br>115–127V AC | **DR30K0L-H8□**<br>**DR30K0L-M8□**<br>**DR30K0L-L8□** |

• **Lens color**

Replace the □ mark by the following lens color code

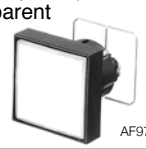
| Color | Green | Red | White | Blue | Yellow | Orange |
|---|---|---|---|---|---|---|
| Code | G | R | W | S | Y | A |

• **Lamp voltage**

Available lamp voltage are as follow.

| Description | Voltage | Code<br>Standard type<br>LED | <br><br>Incandescent | Code<br>Short-body type<br>LED | <br><br>Incandescent |
|---|---|---|---|---|---|
| Without transformer | 5.5V AC/DC | – | 54 | – | – |
| | 6V AC | A3 | – | – | – |
| | 6V DC | 63 | – | – | – |
| | 12V AC/DC | B3 | – | – | – |
| | 15V AC/DC | C3 | C4 | – | – |
| | 20V AC/DC | – | D4 | – | – |
| | 24V AC/DC | E3 | E4 | – | – |
| With transformer | 100-110V AC | H3 | H4 | H9 | H8 |
| | 115-127V AC | L3 | L4 | L9 | L8 |
| | 200-220V AC | M3 | M4 | M9 | M8 |
| | 230-254V AC | Q3 | Q4 | – | – |
| | 350-380V AC | S3 | S4 | – | – |
| | 400-440V AC | T3 | T4 | – | – |
| | 480V AC | V3 | V4 | – | – |
| | 500-550V AC | W3 | W4 | – | – |
| With resistor unit | 110V DC | H7 | – | – | – |
| With resistor | 50V DC | FR | FQ | – | – |
| | 110V DC | HR | HQ | – | – |
| | 220V DC | MR | MQ | – | – |

## ■ Pilot lights/standard

| Lens | Transformer | LED unit Lamp voltage | LED unit Type | Incandescent lamp Lamp voltage | Incandescent lamp Type |
|---|---|---|---|---|---|
| Flush square (34mm sq. transparent lens) AF97-65 | Without | 6V DC<br>15V AC/DC<br>24V AC/DC | **DR30F4M-65□**<br>**DR30F4M-C5□**<br>**DR30F4M-E5□** | 5.5V AC/DC<br>15V AC/DC<br>24V AC/DC | **DR30F4M-54□**<br>**DR30F4M-C4□**<br>**DR30F4M-E4□** |
| | With | 100–110V AC<br>200–220V AC | **DR30F4M-H5□**<br>**DR30F4M-M5□** | 100–110V AC<br>200–220V AC | **DR30F4M-H4□**<br>**DR30F4M-M4□** |
| Flush rectangular (Transparent lens) AF97-61 | Without | 6V DC<br>15V AC/DC<br>24V AC/DC | **DR30F4N-65□**<br>**DR30F4N-C5□**<br>**DR30F4N-E5□** | 5.5V AC/DC<br>15V AC/DC<br>24V AC/DC | **DR30F4N-54□**<br>**DR30F4N-C4□**<br>**DR30F4N-E4□** |
| | With | 100–110V AC<br>200–220V AC | **DR30F4N-H5□**<br>**DR30F4N-M5□** | 100–110V AC<br>200–220V AC | **DR30F4N-H4□**<br>**DR30F4N-M4□** |
| Flush square (40mm sq. transparent lens)  AF97-63 | Without | 6V DC<br>15V AC/DC<br>24V AC/DC | **DR30M4M-65□**<br>**DR30M4M-C5□**<br>**DR30M4M-E5□** | 5.5V AC/DC<br>15V AC/DC<br>24V AC/DC | **DR30M4M-54□**<br>**DR30M4M-C4□**<br>**DR30M4M-E4□** |
| | With | 100–110V AC<br>200–220V AC | **DR30M4M-H5□**<br>**DR30M4M-M5□** | 100–110V AC<br>200–220V AC | **DR30M4M-H4□**<br>**DR30M4M-M4□** |

### • Color plate

Replace the □ mark by the following color plate color code

| Color | Green | Red | White | Blue* | Yellow | Orange |
|---|---|---|---|---|---|---|
| Code | G | R | W | S | Y | A |

Note: * Incandescent lamp only

### • Lamp voltage

Available lamp voltage are as follow.

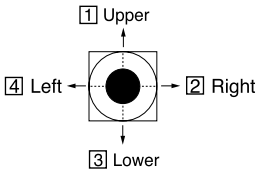
| Description | Voltage | Code Standard type LED | Code Standard type Incandescent |
|---|---|---|---|
| Without transformer | 5.5V AC/DC | – | 54 |
| | 6V AC | A5 | – |
| | 6V DC | 65 | – |
| | 12V AC | 25 | – |
| | 12V AC/DC | B5 | – |
| | 15V AC/DC | C5 | C4 |
| | 20V AC/DC | – | D4 |
| | 24V AC/DC | E5 | E4 |
| With transformer | 100-110V AC | H5 | H4 |
| | 115-127V AC | L5 | L4 |
| | 200-220V AC | M5 | M4 |
| | 230-254V AC | Q5 | Q4 |
| | 350-380V AC | S5 | S4 |
| | 400-440V AC | T5 | T4 |
| | 480V AC | V5 | V4 |
| | 500-550V AC | W5 | W4 |
| With resistor unit | 110V DC | HE | – |

## ■ Joy stick selector switches

| Handle | Terminal | Operating directions | Contact arrangement | Type: Manual return | Type: Spring return |
|---|---|---|---|---|---|
| Ball type without lock AF97-48 | Screw | ↕ | 1NO × 2 | **AR30A0N-A0A0B** | **AR30A5N-A0A0B** |
| | | | 1NO + 1NC × 2 | **AR30A0N-1010B** | **AR30A5N-1010B** |
| | | ↕↔ | 1NO × 4 | **AR30A0N-AAAAB** | **AR30A5N-AAAAB** |
| | | | 1NO + 1NC × 4 | **AR30A0N-1111B** | **AR30A5N-1111B** |
| | Solder/tab | ↕ | 1NO + 1NC × 2 | **AR30A0H-1010B** | **AR30A5H-1010B** |
| | | | 2NO + 2NC × 2 | **AR30A0H-2020B** | **AR30A5H-2020B** |
| | | ↕↔ | 1NO + 1NC × 4 | **AR30A0H-1111B** | **AR30A5H-1111B** |
| | | | 2NO + 2NC × 4 | **AR30A0H-2222B** | **AR30A5H-2222B** |
| Ball type with lock AF97-44 | Screw | ↕ | 1NO × 2 | **AR30A1N-A0A0B** | **AR30A6N-A0A0B** |
| | | | 1NO + 1NC × 2 | **AR30A1N-1010B** | **AR30A6N-1010B** |
| | | ↕↔ | 1NO × 4 | **AR30A1N-AAAAB** | **AR30A6N-AAAAB** |
| | | | 1NO + 1NC × 4 | **AR30A1N-1111B** | **AR30A6N-1111B** |
| | Solder/tab | ↕ | 1NO + 1NC × 2 | **AR30A1H-1010B** | **AR30A6H-1010B** |
| | | | 2NO + 2NC × 2 | **AR30A1H-2020B** | **AR30A6H-2020B** |
| | | ↕↔ | 1NO + 1NC × 4 | **AR30A1H-1111B** | **AR30A6H-1111B** |
| | | | 2NO + 2NC × 4 | **AR30A1H-2222B** | **AR30A6H-2222B** |
| Rubber cap type without lock AF97-57 | Screw | ↕ | 1NO × 2 | **AR30A2N-A0A0B** | **AR30A7N-A0A0B** |
| | | | 1NO + 1NC × 2 | **AR30A2N-1010B** | **AR30A7N-1010B** |
| | | ↕↔ | 1NO × 4 | **AR30A2N-AAAAB** | **AR30A7N-AAAAB** |
| | | | 1NO + 1NC × 4 | **AR30A2N-1111B** | **AR30A7N-1111B** |
| | Solder/tab | ↕ | 1NO + 1NC × 2 | **AR30A2H-1010B** | **AR30A7H-1010B** |
| | | | 2NO + 2NC × 2 | **AR30A2H-2020B** | **AR30A7H-2020B** |
| | | ↕↔ | 1NO + 1NC × 4 | **AR30A2H-1111B** | **AR30A7H-1111B** |
| | | | 2NO + 2NC × 4 | **AR30A2H-2222B** | **AR30A7H-2222B** |

### • Operating direction

- Directions other than those shown in the table above can be provided.
- For types AR30A□N-1 2 3 4 B, designate the contact arrangement codes for the necessary operating directions (1: Upper, 2: Right, 3: Lower, 4: Left). Designate "0" for unnecessary directions.




### • Contact arrangement

| Contact arrangement | | – | 1NO | 1NC | 1NO+1NC | 2NO | 2NC | 2NO+2NC |
|---|---|---|---|---|---|---|---|---|
| Manual return Spring return | Screw | 0 | A | B | 1 | D | E | – |
| | Solder/Tab | 0 | – | – | 1 | – | – | 2 |

- Spring/manual return are also available, contact FUJI .

## ■ Buzzers

| Sound | Description | Transformer | Operating voltage | Type |
|---|---|---|---|---|
| Electronic sound AF96-381 | • LED operation indicator (Red)<br>• Intermittent/continuous sound selection<br>• Sound level: 90dB (0.1m)<br>70dB (1m) | Without | 6V AC<br>6V DC<br>12 to 24V AC/DC<br>35 to 48V AC/DC | **DR30B5-AB**<br>**DR30B5-6B**<br>**DR30B5-EB**<br>**DR30B5-FB** |
| | | With | 100 to 110V AC<br>200 to 220V AC | **DR30B5-HB**<br>**DR30B5-MB** |
| | | With resistor unit | 100 to 110V DC | **DR30B5-1B** |
| Electronic sound (economy) KK02-145A | • Sound level: 90dB (0.1m)<br>70dB (1m) | Without | 6V DC<br>24V AC<br>24V DC | **DR30B6-6B**<br>**DR30B6-GB**<br>**DR30B6-EB** |
| | | With | 100 to 110V AC<br>200 to 220V AC | **DR30B6-HB**<br>**DR30B6-MB** |
| Magnetic sound AF96-378 | • Sound level: 90dB (0.1m)<br>70dB (1m) | Without | 100 to 110V AC<br>200 to 220V AC | **DR30B0-HB**<br>**DR30B0-MB** |
| Electronic sound (IP54) AF96-245 | • Intermittent/continuous sound selection<br>• Sound level: 80dB (0.1m)<br>60dB (1m) | Without | 6V AC<br>6V DC<br>12 to 24V AC/DC<br>35 to 48V AC/DC | **DR30B8-AB**<br>**DR30B8-6B**<br>**DR30B8-EB**<br>**DR30B8-FB** |
| | | With | 100 to 110V AC<br>200 to 220V AC | **DR30B8-HB**<br>**DR30B8-MB** |
| | | With resistor unit | 100 to 110V DC | **DR30B8-1B** |

Notes: • Intermittent/continuous sound selection (DR30B5, B8)
See the "Short-circuit terminal" in the dimensions diagram on the *102*. page, and select as follows:
• Short-circuit terminal mounted → Intermittent sound
• Short-circuit terminal not mounted → Continuous sound

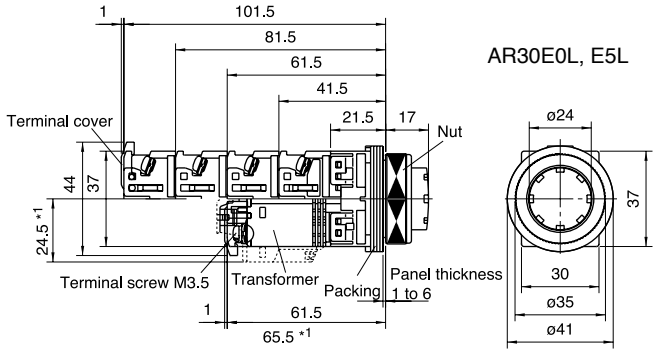
# AR30 and DR30
# Dimensions

## ■ Dimensions, mm

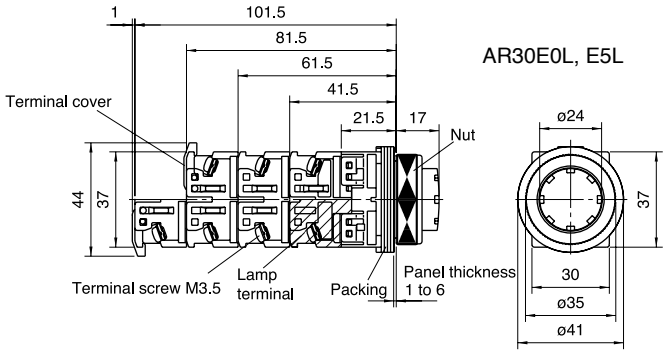
### ● Illuminated pushbuttons

**Extended**

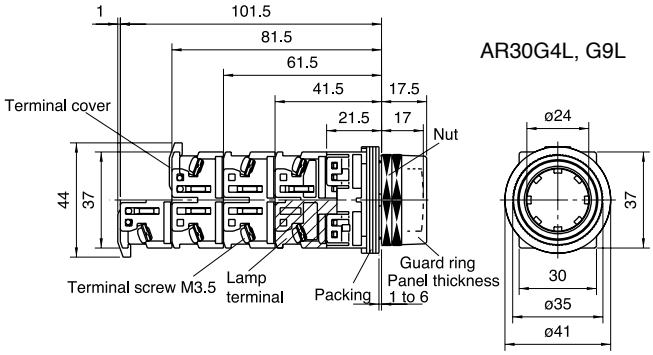
With transformer



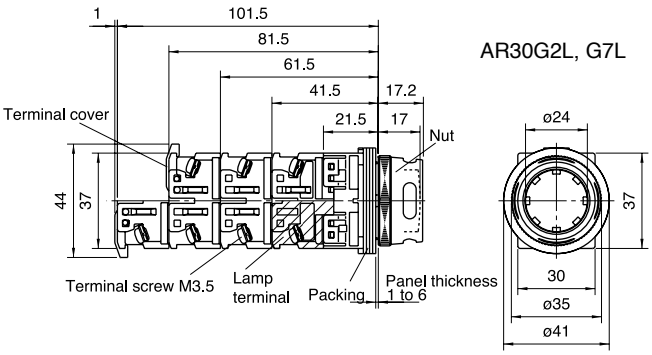

Without transformer



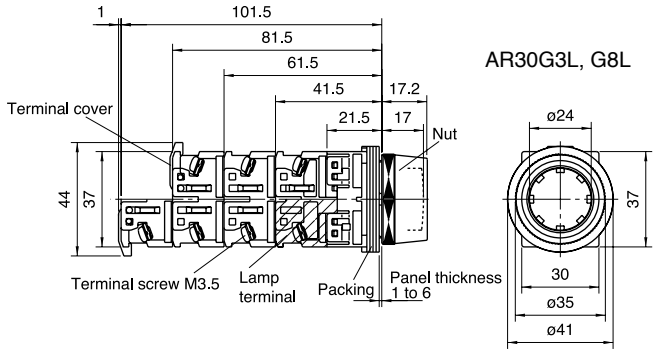

**Extended with transparent full guard** (24mm dia.)




**Extended with full guard** (24mm dia. with openings)




**Extended with full guard** (24mm dia.)



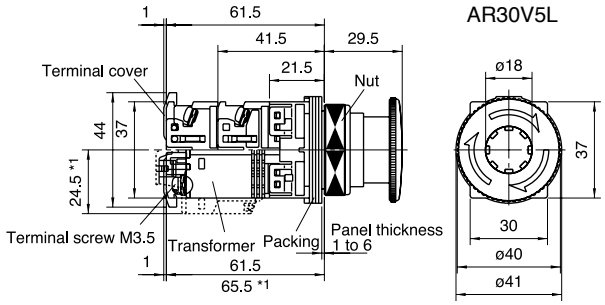

Note: *1 Except for the types 110V AC, 127V AC and 220V AC.

## ■ Dimensions, mm

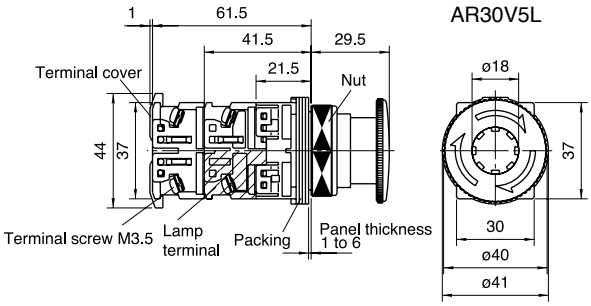
### ● Illuminated pushbuttons

**Push-lock, turn-reset** (40mm dia. with white arrow)

With transformer

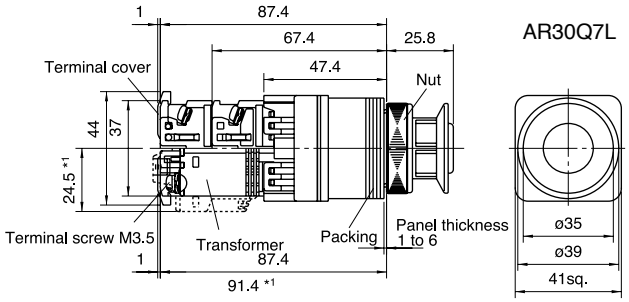



Without transformer

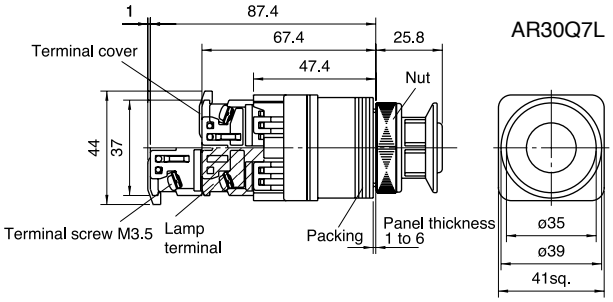



**Push-pull**

With transformer




Without transformer



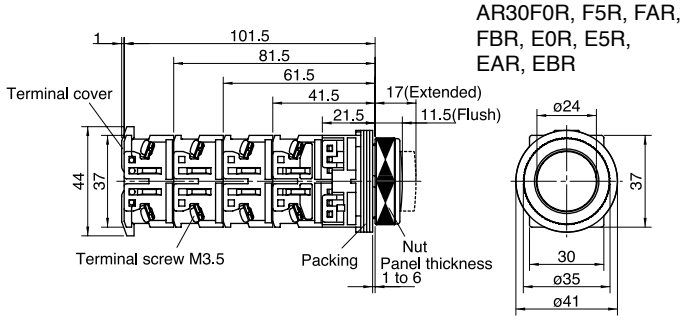

Note: *1 Except for the types 110V AC, 127V AC and 220V AC.

# AR30 and DR30
# Dimensions

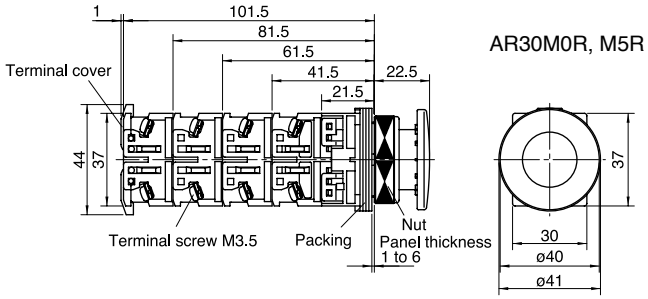
## ■ Dimensions, mm

### ● Pushbuttons

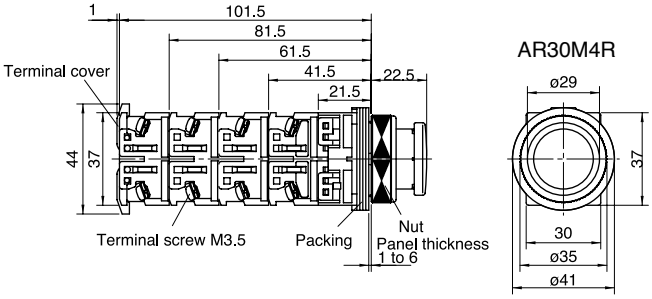
**Flush/Extended**



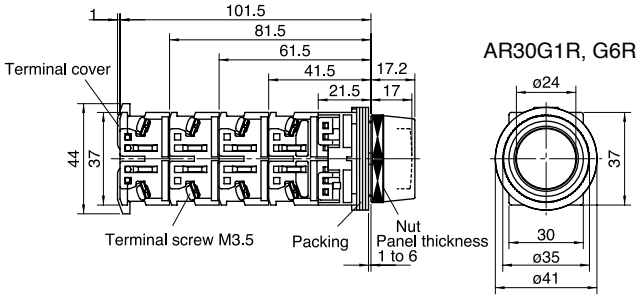

**Mushroom** (40mm dia.)



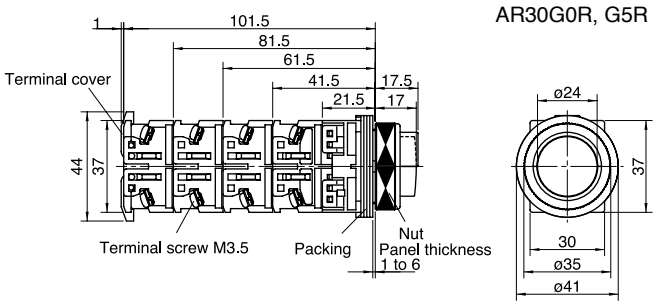

**Mushroom** (29mm dia.)



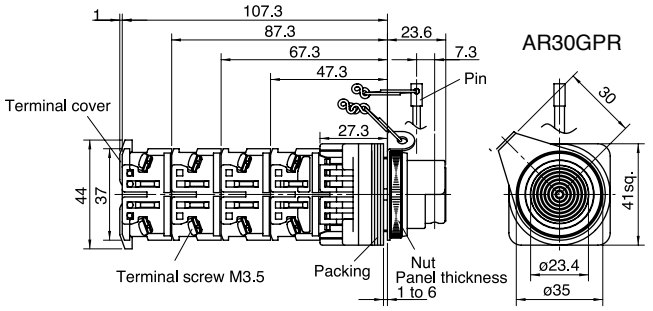

**Extended with full guard** (24mm dia.)




**Extended with half guard**

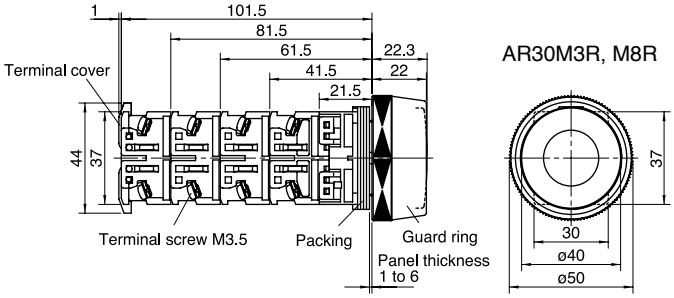



**Pin lock**

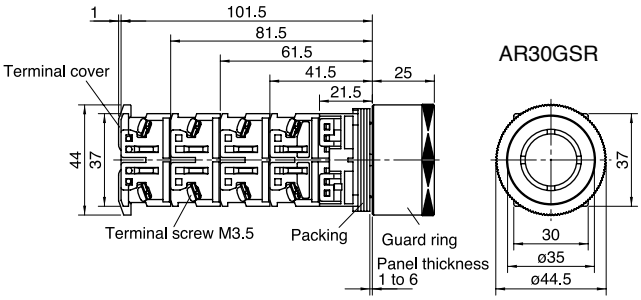



Note:
The enclosed pin can be inserted to lock the pushbutton in a pushed or not pushed state.

**Mushroom with full guard** (40mm dia.)



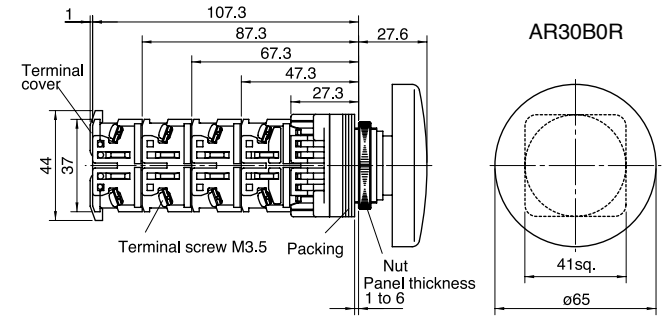

**Mushroom with full guard** (35mm dia. metal nut)



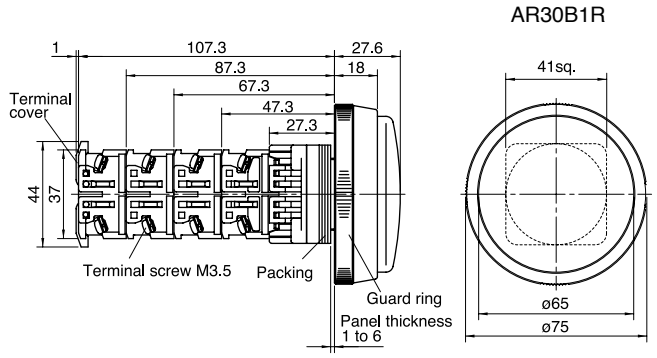
## ■ Dimensions, mm

### ● Pushbuttons

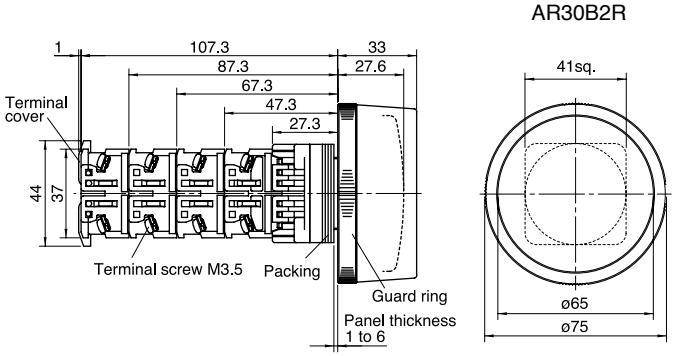
**Giant**



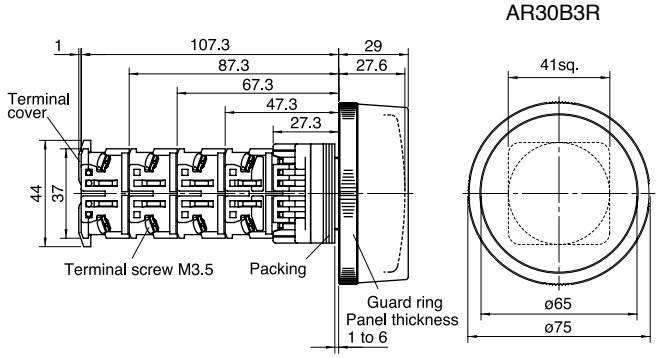

**Giant with guard**



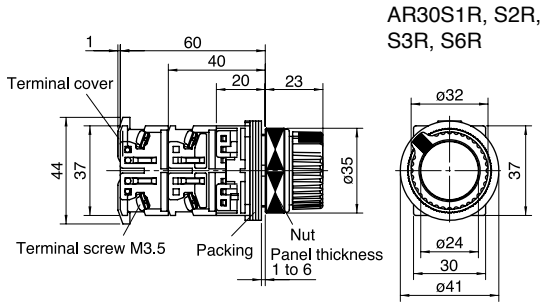

**Giant with full guard**



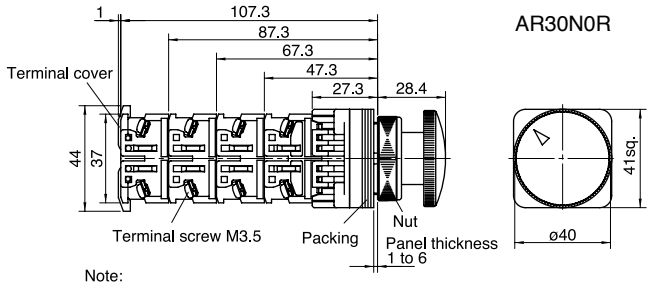

**Giant with full guard**




**Pushbutton with selector ring** (2-position)

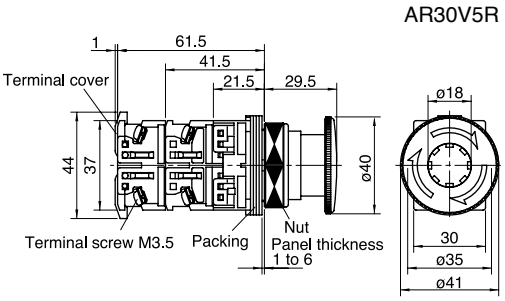



**Push, turn-lock**

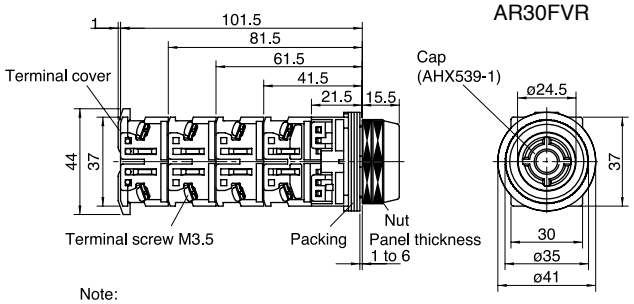



Note:
When the push button is pressed in the left position, it resets automatically (momentary operation).
When pressed and turned to the right it locks, and to the left it resets.

**Push-lock, turn-reset** (40mm dia. with white arrow)




**Emergency operating cap**



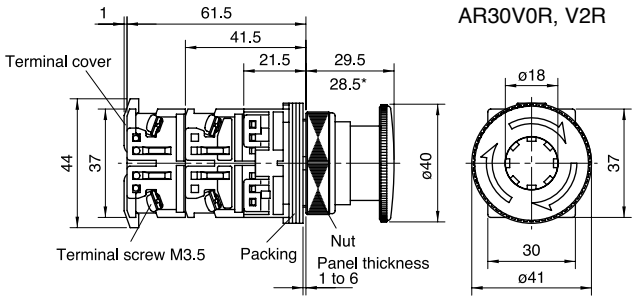

Note:
This is pushbutton switch is operated while holding the cap with the fingertips.
The cap (AHX539-1) can be exchanged.

# AR30 and DR30
# Dimensions

## ■ Dimensions, mm

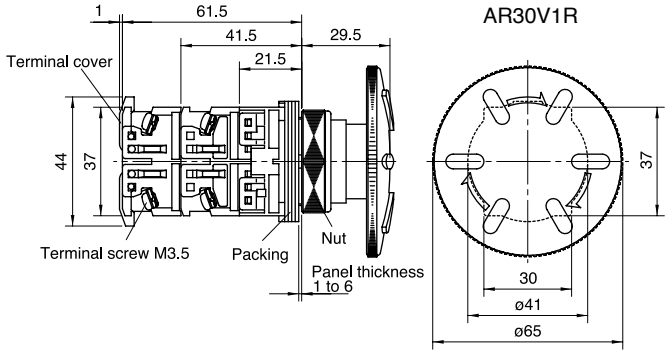
### ● Emergency stop pushbuttons

**Push-lock, turn-reset** (40mm dia.)

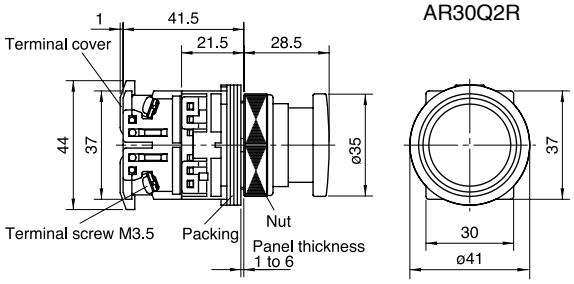



Note: * AR30V2R type

**Push-lock, turn-reset** (65mm dia. with white allow)



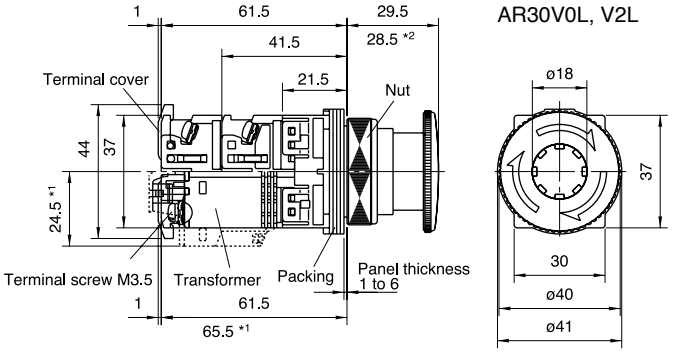

**Push-lock, pull-reset** (35mm dia.)



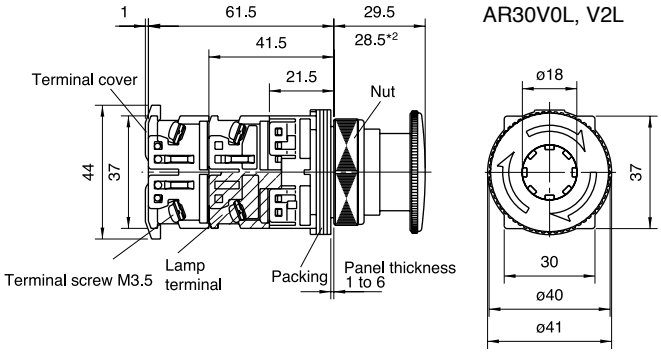

### ● Emergency stop illuminated pushbuttons

**Push-lock, turn-reset** (40mm dia.)

With transformer




Without transformer

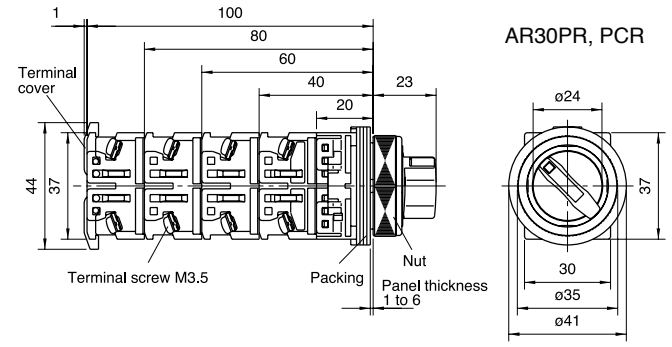



Notes: *1 Except for the types 110V AC, 127V AC and 220V AC.
*2 AR30V2L type

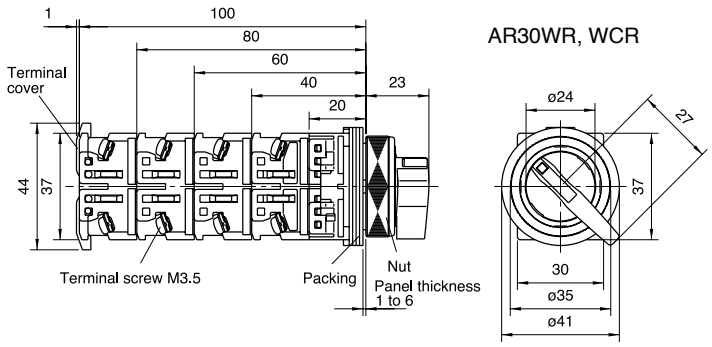
## ■ Dimensions, mm

### ● Selector switches

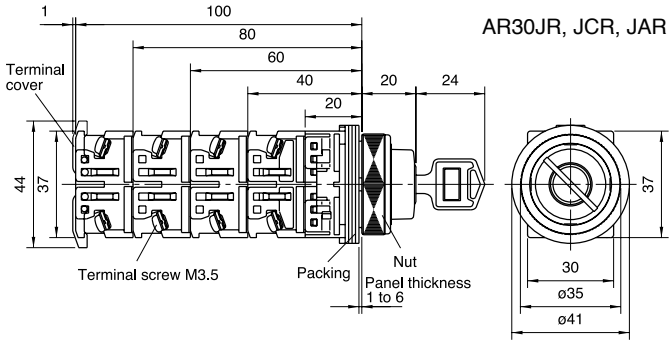
**Knob**




**Lever**



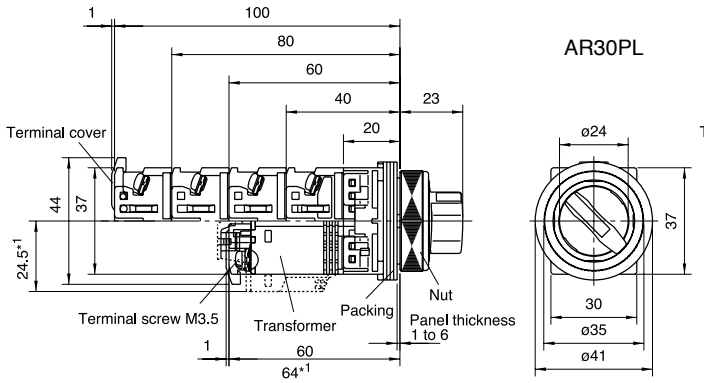

**Key**



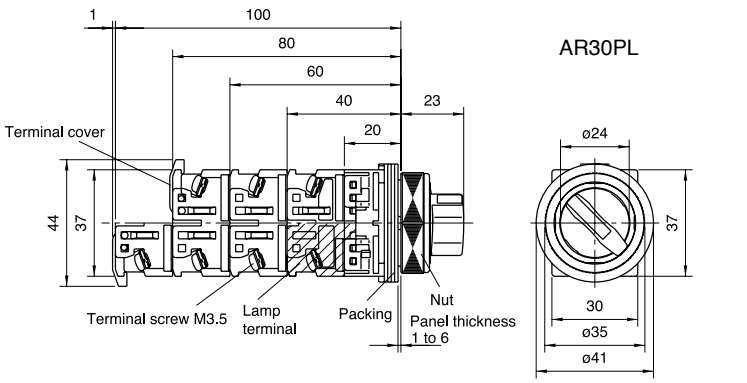

### ● Illuminated selector switches

**Knob**

With transformer




Without transformer




Notes: *1 Except for the types 110V AC, 127V AC and 220V AC.

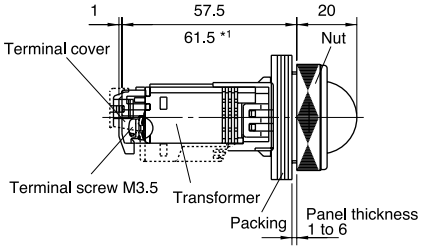
# AR30 and DR30
# Dimensions

## ■ Dimensions, mm

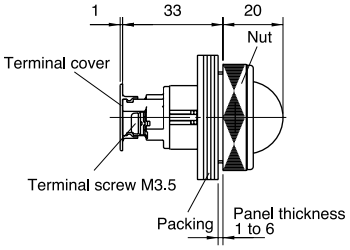
### ● Pilot lights

**Dome**

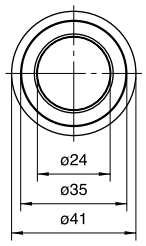
With transformer, with resistor unit



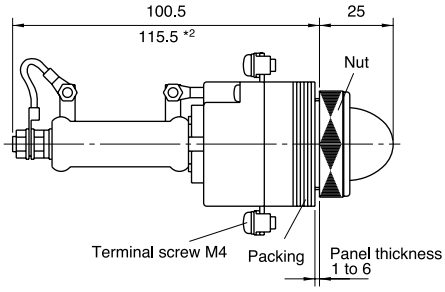

Without transformer



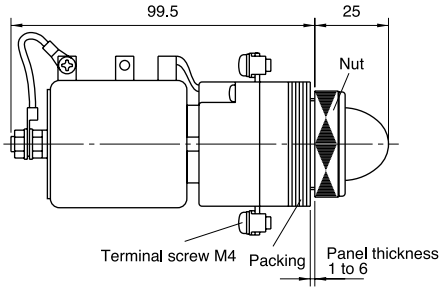

DR30D0L



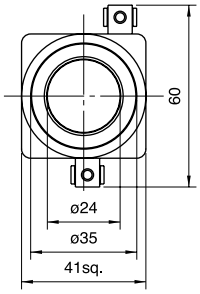

With resistor LED, incandecent (50V DC)



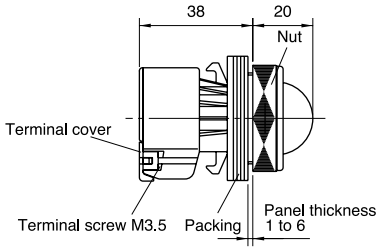

With resistor Incandescent (110, 220V DC)



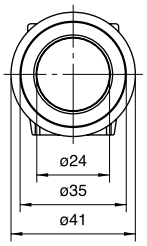

DR30D0L




Short-body / with transformer

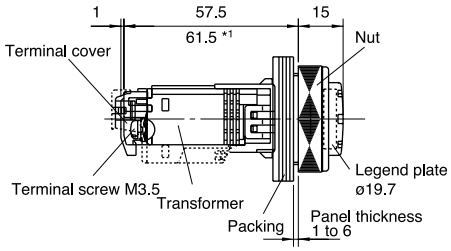



DR30D0L

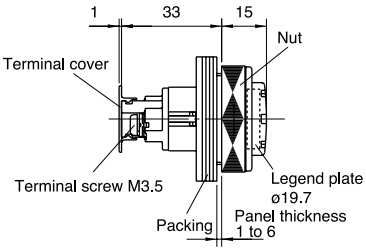



**Extended**

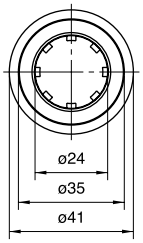
With transformer, with resistor unit



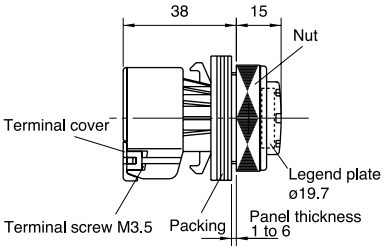

Without transformer



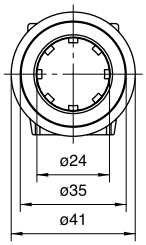

DR30E3L




Short-body / with transformer




DR30E3L



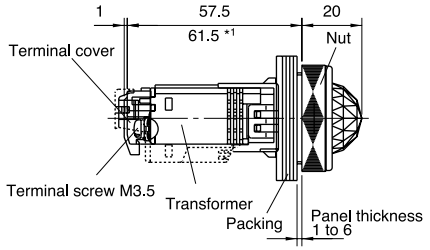

Notes: *1 Except for the types 110V AC, 127V AC and 220V AC.
*2 Incandecent (50V DC) type only

## ■ Dimensions, mm

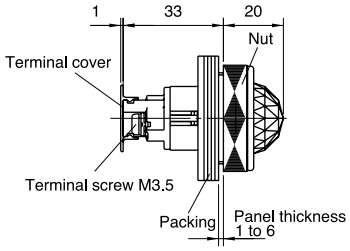
### ● Pilot lights

**Faceted**

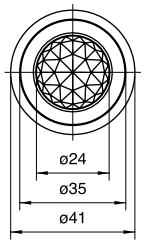
With transformer, with resistor unit



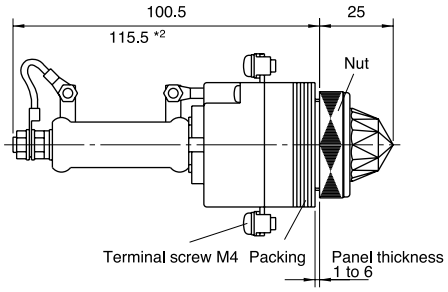

Without transformer



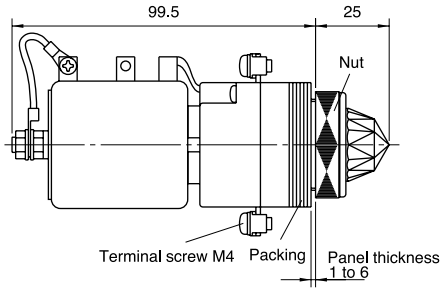

DR30K0L



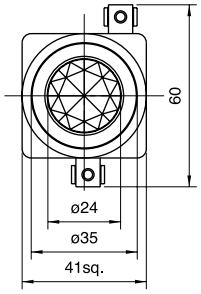

With resistor LED, incandescent (50V DC)



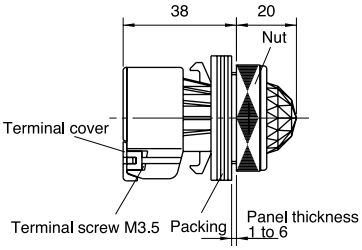

With resistor LED, incandescent (110, 220V DC)



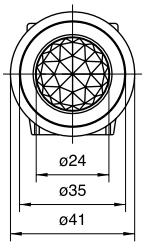

DR30K0L



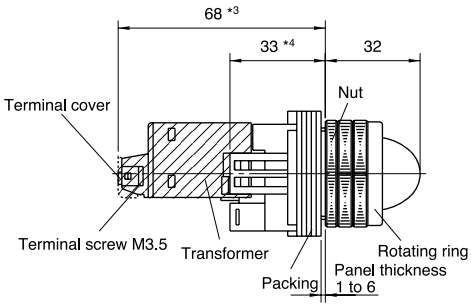

Short-body / with transformer



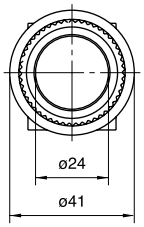

DR30K0L




**Dome with dimmer control**




DR30D1L




Notes: *1 Except for the types 110V AC, 127V AC and 220V AC.
*2 Incandecent (50V DC) type only
*3 With transformer, with resistor unit type only
*4 For without transformer types, add 1 mm when mounting the terminal cover.

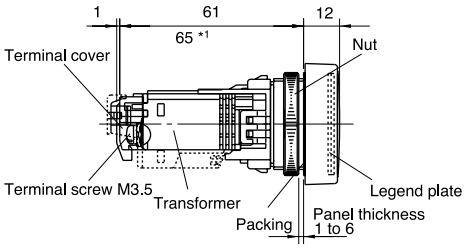
# AR30 and DR30
# Dimensions

## ■ Dimensions, mm

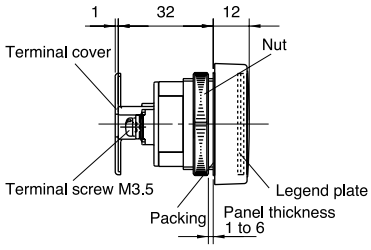
### ● Pilot lights

**Flush square** (34mm sq. transparent lens)

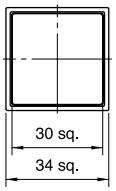
With transformer, with resistor unit




Without transformer

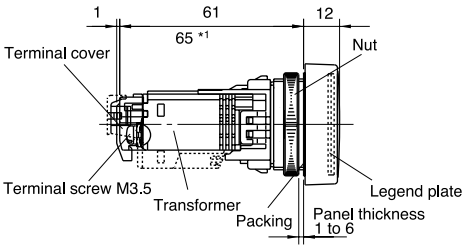



DR30F4M

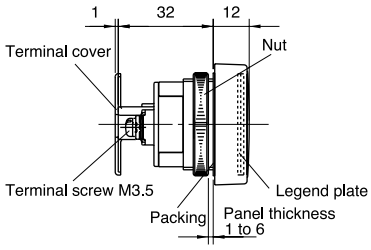



**Flush rectangular** (Transparent lens)

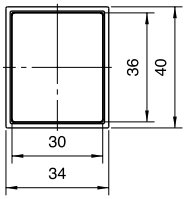
With transformer, with resistor unit




Without transformer

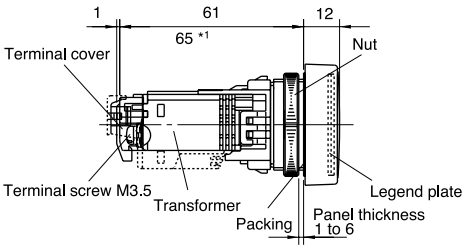



DR30F4N

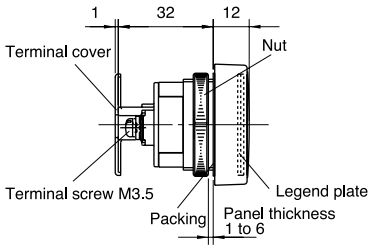



**Flush square** (40mm sq. transparent lens)

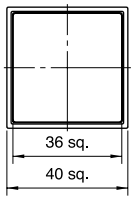
With transformer, with resistor unit




Without transformer




DR30M4M

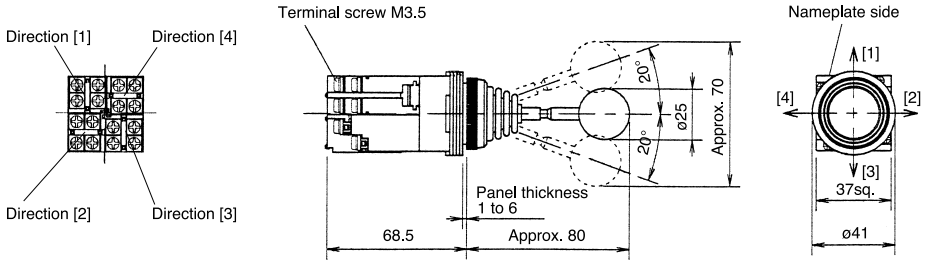



Note: *1 Except for the types 110V AC, 127V AC and 220V AC.

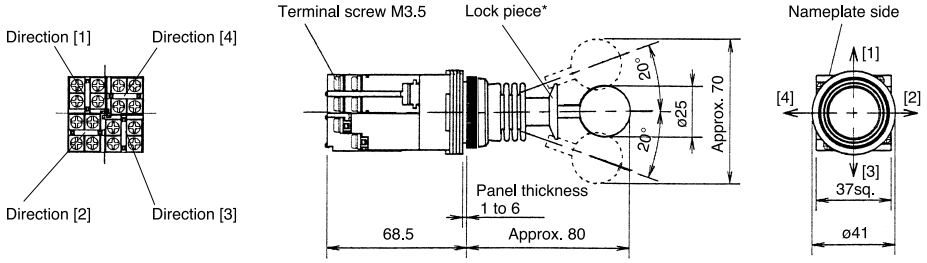
## ■ Dimensions, mm

### ● Joy stick selector switches

**Ball type** (without lock)
AR30A0N, A5N: Screw terminal

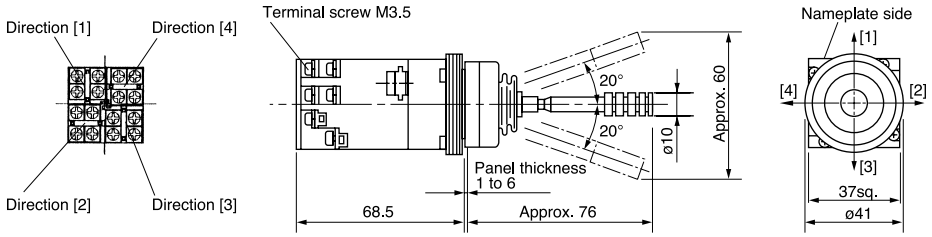



**Ball type with lock**
AR30A1N, A6N: Screw terminal

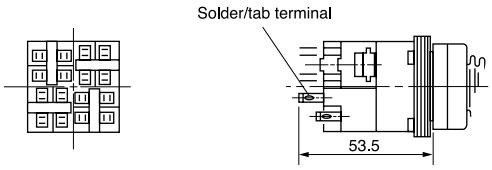



Notes * The contact arrangement is operable in the designated direction by pulling the lock piece in the central position with the fingers. The lock piece will return automatically and locks when the lock piece is released in the central position.
The lock piece locks in the central position only.

**Rubber cap type** (without lock)
AR30A2N, A7N: Screw terminal




Solder/tab terminal: **AR30A□H**



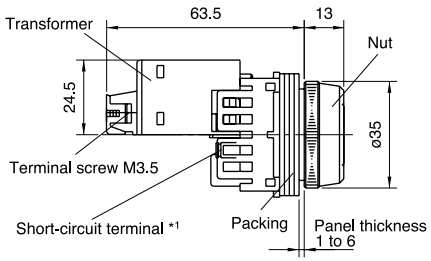
# AR30 and DR30
# Dimensions

## ■ Dimensions, mm

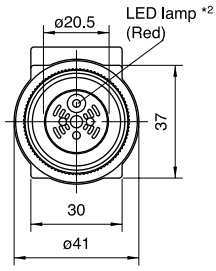
### ● Buzzers

**Electronic sound**

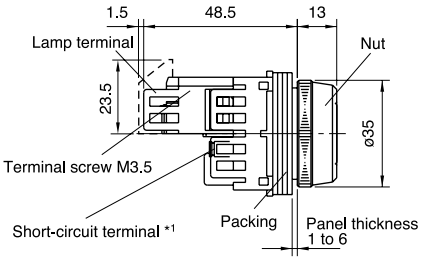
With transformer



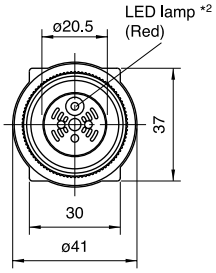

DR30B5, B6



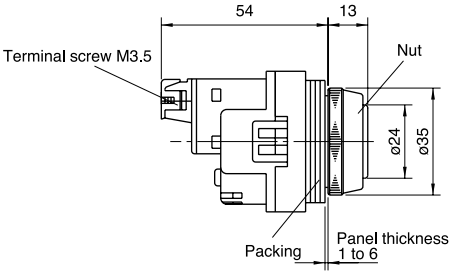

Without transformer



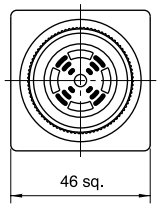

DR30B5, B6




**Magnetic sound**

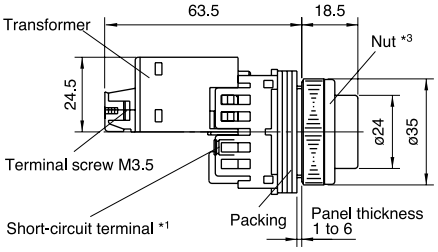



DR30B0

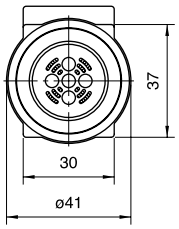



**Electronic sound (IP54)**

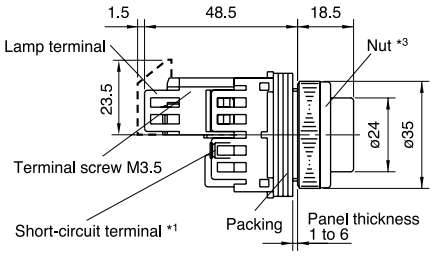
With transformer



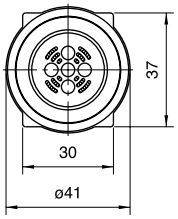

DR30B8




Without transformer




DR30B8

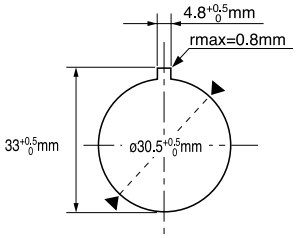



Notes: *1 There are no short-circuit terminals with DR30B6. (Continuous sound only)
*2 There are no LED lamps with DR30B6.
*3 The nut and cap are united with DR30B8.

## Notes on use

### ■ Panel cutout hole

**Fig. 1 Panel cutout hole dimensions, mm**



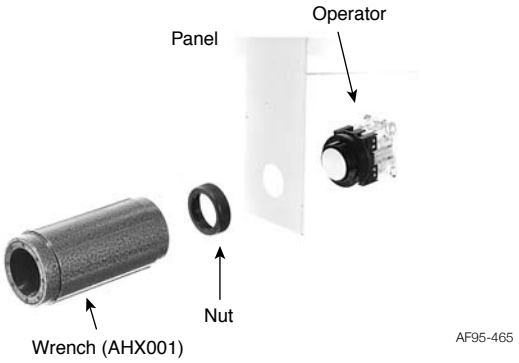

Note : If key-washer or legend plate are not used, 4.8mm-wide. location holes shown in Fig. 1 need not be cutout.

### ■ Mounting operator to panel

**1. Pushbutton with a round bezel (ordinary mounting)**

Insert the operator into the cutout hole from the back of the panel, and tighten the nut with the AHX001 wrench from the front of the panel to secure the operator as shown in Fig.2.

**Fig. 2 Pushbutton with a round bezel**

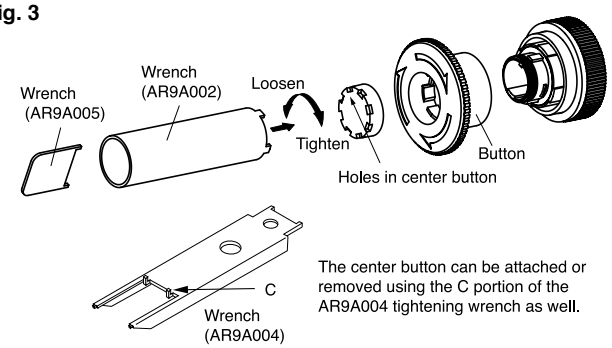



Note : Recommended tightening torque is from 1.5 to 2N·m.

**2. AR30V0R, V0L, V2R, V2L, V5R, V5L**

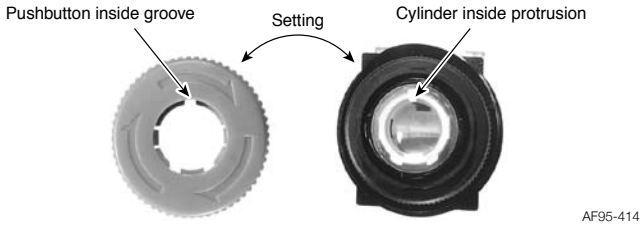
(1) The button is removed after loosening the center button by inserting the end of the AR9A002 tightening wrench or the AR9A005 wrench (enclosed with pushbutton) into the holes in the center button and turning counterclockwise, as shown in Fig.3.
(2) Attach the operator in the same manner as described in step 1.

**Fig. 3**




Insert the operator into the cutout hole from the back of the panel, and as shown in Fig.4, insert the pushbutton into the operator cylinder while aligning the grooves inside the pushbutton with the protrusions on the operator.

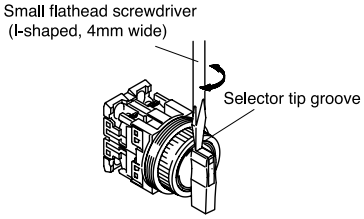
**Fig. 4 Setting pushbutton to operator cylinder**




**3. AR30WR, WCR**

(1) As shown in the following figure, insert the tip of a flathead screwdriver into the selector tip groove. Rotate the screwdriver in the direction indicated by the arrow until the selector tip rises, and draw out the knob.
(2) Attach the operator in the same manner as described in step 1.
(3) Insert the knob, with the selector tip in the floated state, into the original position of the rotation tube, and push the selector tip into place.

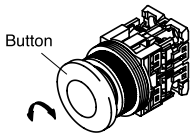
**Fig. 5**




**4. AR30M0R, M4R, M5R, B0R, Q7L**

(1) Loosen the button by hand.
(2) Attach the operator in the same manner as described in step 1.
(3) Screw in the button by hand, making sure that the button is screwed in all the way. (Recommended tightening torque: 0.3 to 0.5 N•m)

**Fig. 6**

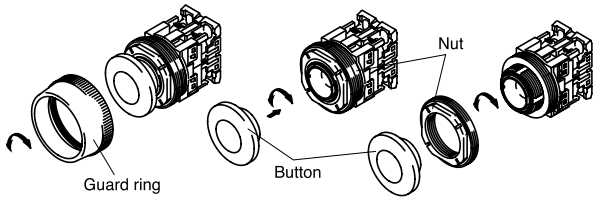



**5. AR30M3R, M8R, B1R, B2R and B3R**

The outer circumference of the nut is threaded, so be careful not to cut your hand on it.

(1) Loosen and remove the guard ring by hand.
(2) Loosen and remove the button and nut by hand.
(3) Insert the operator into the cutout hole from the back of the panel, and tighten the nut to secure it in place. (Recommended tightening torque: 0.3 to 0.5 N•m)
(4) Screw in the button by hand, making sure that it is screwed in all the way. (Recommended tightening torque: 0.3 to 0.5 N•m)
(5) Loosen and remove the guard ring by hand. (Recommended tightening torque: 1.5 to 2.5 N•m)

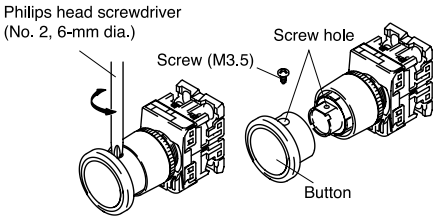
**Fig. 7**



**6. AR30N0R, V1R, Q2R**

(1) Loosen and remove the screw on the side of the button, taking care not to loosen the screw.
(2) Attach the operator in the same manner as described in step 1.
(3) Attach and secure the button in place with the screw, making sure that the head of the screw does not protrude from the side.
(4) Recommended tightening torque: N0R, V1R 0.5 to 1.0N•m
Q2R 0.3 to 0.5N•m

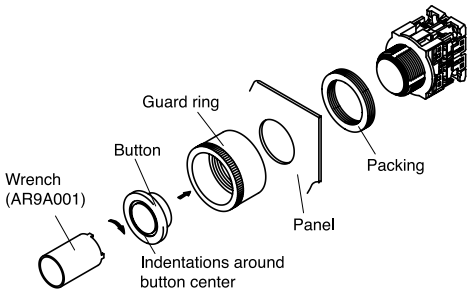
**Fig. 8**




**7. AR30GSR**

(1) Insert the tips of the AR9A001 wrench into the indentations around the button center, and turn the wrench to loosen and remove the button.
(2) Loosen and remove the guard ring by hand.
(3) Insert the switch operator into the cutout hole from the back of the panel, and secure it with the guard ring from the front of the panel. (Recommended tightening torque: 1.5 to 2.5 N•m)
(4) Attach and secure the button with the AR9A001 wrench. (Recommended tightening torque: 0.3 to 0.5 N•m)

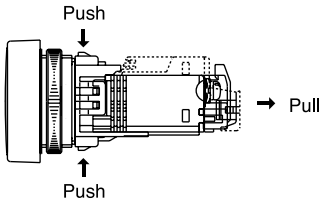
**Fig. 9**




**8. DR30F4M, F4N, M4M**

Insert the pilot lights from the front of the panel and fix it with the AHX536 tightening wrench from the back of the panel.
(1) Recommended tightening torque: 1 to 1.5N•m
(2) For pilot lights with transformers and resistance units, remove the transformer or resistance unit in advance. (Fig.10)

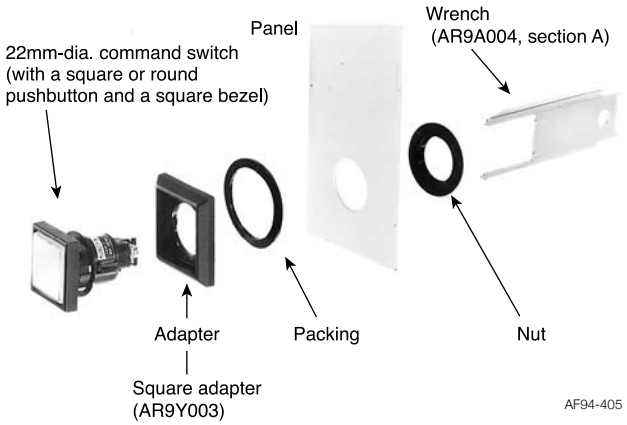
**Fig. 10**




**9. Mounting a 22mm-dia. command switch with a square button and a square bezel, or with a round button and a square bezel, to a panel cutout hole for a 30mm-dia. command switch using an adapter**

As shown in Fig. 11, mount an adapter and packing onto a 22mm-dia. command switch (AR22, DR22 series) with a square button and a square bezel or one with a round button and a square bezel. Then, insert the switch operator into the panel cutout hole from the front of the panel. Use AR9A004 wrench section A to tighten the locking nut from behind the panel to secure the switch.
Use the adapter accessory nut for this purpose. Do not use the command switch accessory nut.

**Fig. 11 Command switch with a square button and a square bezel, and command switch with a round button and a square bezel**



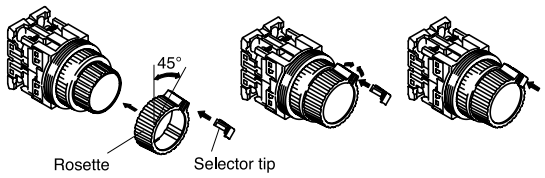

Note : • Recommended tightening torque is from 1 to 1.5N•m.
• Panel thickness: 2.5 to 5mm

This adapter can be used with the following 22mm-dia. Command switches :
- AR22F0M, F5M, E0M, E5M, F0P, F5P, E0P, E5P, M4P
- AR22F0S, F5S, E0S, E5S, F0Y, F5Y, E0Y, E5Y, M4Y
- AR22PY, PCY, WY, WCY, RY, RCY, JY, JCY, PP
- DR22F3M, F4M, F5M, E3M, E3P

**10. AR30S1R, S2R, S3R, S6R**

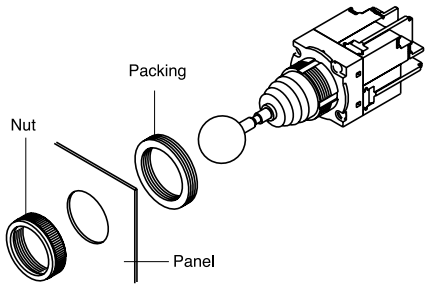
(1) Attach the operator in the same manner as described in step 1.
(2) Attach the rosette assembly to the operator.
(3) Pressing the rosette from the directions indicated by the arrows, insert the selector tip in the groove.
(4) Make sure that the selector tip is inserted completely.
(5) To remove the rosette, use a small flathead screwdriver to remove the selector tip as described in step 3, and then remove the rosette.

**Fig. 12**



**11. AR30A (joy stick selector)**
(1) Remove the clamp ring as shown in the following figure.
(2) Attach the operator in the same manner as described in step 1.
Note: Even if a lock type is used, remove the clamp ring in the same manner.

**Fig. 13**

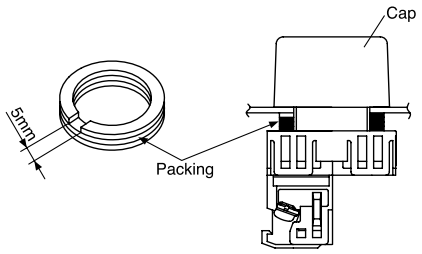



## ■ Water-proof and dust-proof cap

Applicable type: Water-proof cap AHX052
Dust-proof cap AHX032, 033, 034
AHX113
AHX157

When attached to the panel in combination with a water-proof or dust-proof cap, the water-proof cap or dust-proof cap may sink downward and prevent the depressed button from returning to its original position.
As shown in the following figure, cut an approximately 5-mm air outlet in the portion of the ring packing touching the panel surface. Also, reduce the number of packing rings by one below the standard number. The clamp ring tightening torque is 1.5 to 2.5 N•m.

**Fig. 14**




**Degree of protection**
The water-proof cap or dust-proof cap seals the panel surface to provide IP65 protection.

## ■ Applicable panel thickness

The AR30/DR30 series switches are mountable to panels with the thickness given in the table below.

| Switch mounting condition | | Applicable panel thickness |
|---|---|---|
| Without accessories | | 1 to 6mm |
| With accessories | AR9Y003 adapter | 2.5 to 5mm |

## ■ Using accessory ring-packings

Use the required number of ring-packings (1.6mm-thick, 4 pieces, resin mold).
Table below is a guideline for using the packings.
If a locking nut or legend plate is used, the thickness must be counted as an additional panel thickness.

**Panel thickness vs. number of packings (reference data)**

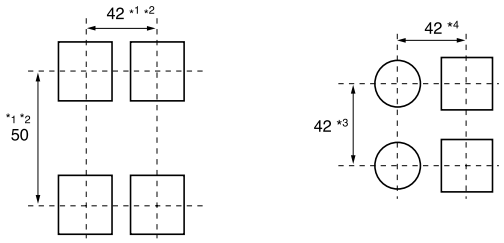
| Effective panel thickness including lock-ring and legend plate thicknesses | Number of packings |
|---|---|
| 1.0mm to less than 2.0mm | |
| 2.0mm to less than 3.6mm | |
| 3.6mm to less than 5.0mm | |
| 5.0mm to less than 6.0mm | |

## ■ Minimum mounting space, mm

The minimum mounting spaces required for AR30/DR30 command switches are given below. (Fig. 15)

**Fig. 15**

- Illuminated pushbutton and pushbutton
- Emergency stop illuminated pushbutton and emergency stop pushbutton
- Illuminated and non-illuminated selectors
- Pilot light

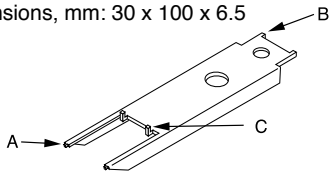



Notes: *1 AR30M3R, M8R, GSR: 55mm
*2 AR30B□R, GPR, V1R: 80mm

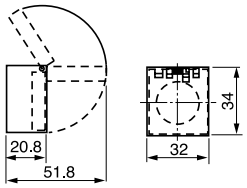
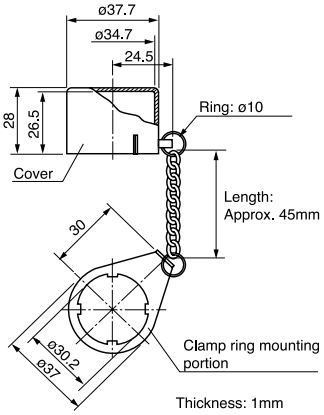
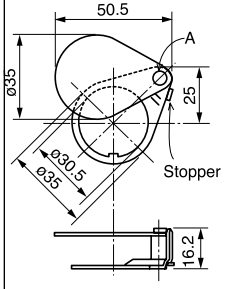
| Type | *3 | *4 |
|---|---|---|
| F4M | 34 | 34 |
| F4N (Vertical lengthwise mounting) | 40 | 34 |
| (Horizontal lengthwise mounting) | 34 | 40 |
| M4M | 40 | 40 |
| Pilot lights short-body with transformer | 50 | 42 |
| Pilot lights with resistor | 80 | 42 |

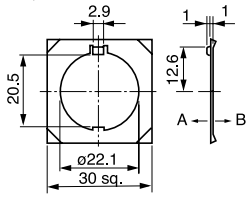
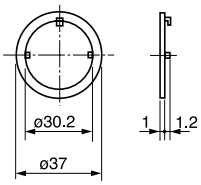
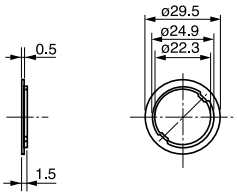
Other items are the same as for the AR22 and DR22 series, *see page 50 to 54*.

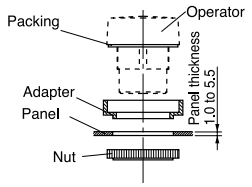
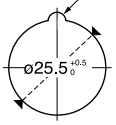
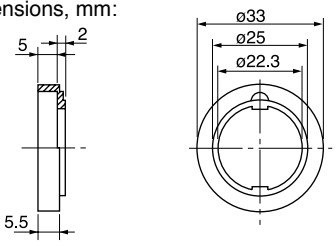
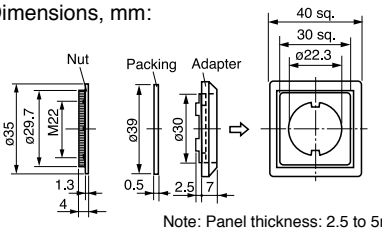
## ■ Accessories

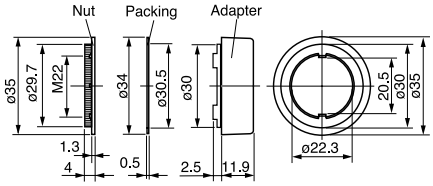
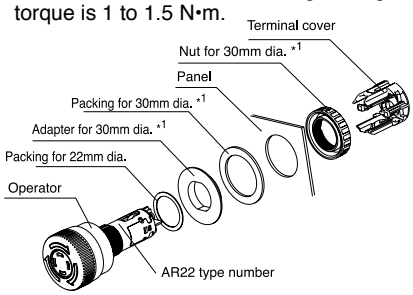
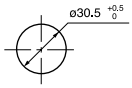
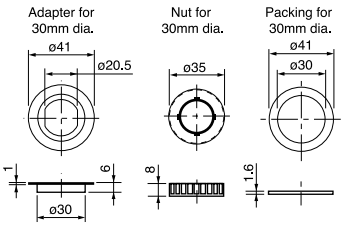
| Description | Type |
|---|---|
| Wrench<br> <br>KK02-261 | **AR9A004**<br>Dimensions, mm: 30 x 100 x 6.5<br>  <br><br>Remarks<br>Section “A”<br>Use this section to tighten the nut for mounting the operator on a panel.<br><br>Section “B”<br>Use this section to tighten or remove the lens.<br>Applicable type:<br>AR22F0L, F5L, E0L, E5L, F0P, F5P, E0P, E5P<br>AR22G1L, G2L, G4L, G6L, G7L, G9L<br>DR22E3L, E3P<br>AR30E0L, E5L, G2L, G3L, G4L, G7L, G8L, G9L<br>DR30E3L<br><br>Section “C”<br>Fit the tabs on the section “C” in the center button, and turn the wrench to tighten or remove the button.<br>Applicable type:<br>AR22V (except V4R, VG type)<br>AR30V (except V1R type) |
| Wrench for<br>AR22, DR22<br> | **AR9A701**<br>Dimensions, mm: ø28 x 70<br><br>Application:<br>AR22, DR22 nut tightening |
| Wrench<br> <br>KK02-097A | **AHX536**<br>Dimensions, mm: ø32 x 76<br><br>Application:<br>DR30F4M, F4N, M4M, N1, N2 nut tightening |
| Wrench<br> <br>KK02-098A | **AR9A001**<br>Dimensions, mm: ø22 x 35<br><br>Application:<br>AR22, DR22 round-type lens tightening<br>AR22E0M, E5M oil-proof cap tightening<br>AR30, DR30 round-type lens tightening<br>AR30GSR button tightening |
| Wrench (for center button)<br> | **AR9A002**<br>Dimensions, mm: ø18 x 60<br><br>Application:<br>AR22V center button tightening (except V4R, VG type)<br>AR30V center button tightening (except V1R type) |
| Wrench<br> <br>AF03-5 | **AHX701**<br>Dimensions, mm: ø25 x 72.5<br><br>Application:<br>DR22N, AR22VG nut tightening |

| Description | Type |
|---|---|
| Wrench<br>(for center button)<br> <br>AF93-6 | **AHX8003**<br>Dimensions, mm: ø14 x 50<br><br>Attaching and removing the center button of the AR22VGF type. |
| Wrench for<br>AR22,30 and DR22, 30<br> <br><br>AF96-241 | **AR9A006**<br>Dimensions, mm: ø40 x 100<br><br>To mount an AR22, 30 or DR22, 30 command switch to a panel, use this wrench to tighten the nut securely. It is very easy to fit this wrench onto the nut.<br>The wrench with an inside rubber-lining can be easily used with either your right or left hand. |
| Wrench for<br>AR30, DR30<br> <br>AF95-467 | **AHX001**<br>Dimensions, mm: ø47 x 100<br><br>To mount an AR30 or DR30 command switch to a panel, use this wrench to tighten the nut securely. |
| Special tool<br> <br>AHX321<br>SG-873<br> <br>DR9A321-T<br>AF95-21 | **AHX321**<br>Dimensions, mm: 42 x 130 x 6.5<br>For all types except pilot lights<br><br>**DR9A321-T**<br>Dimensions, mm: 57 x 130 x 30<br>For pilot lights<br><br>• This tool is used to remove contact blocks and transformer units.<br>• The AHX321 can remove round color lens of switches. |
| Wrench/Lamp changer<br> <br>SI-1030 | **AHX702**<br>Dimensions, mm: ø36 x 55<br><br>Use this wrench to tighten or remove the lens and lamp.<br><br>Used with:<br>Lens of DR22D0L, K0L and DR30D0L, K0L<br>Incandescent lamp of pilot lights and illuminated pushbuttons |
| Lamp changer<br>For BA9S/13 lamp<br> <br>For E12/15 lamp<br>AF95-22 | **AHX790**<br>Dimensions, mm: ø14 x 55<br><br>• Use this rubber wrench for mounting or removing lamps from pilot lights and illuminated pushbutton switches.<br>• This wrench can be used for both LED and incandescent lamps.<br>• One end is for the BA9S/13 lamp, and the other is for the E12/15 lamp (for use with 30mm dia. pilot lights with resistor).<br>• For 30mm dia. pilot lights with resistor, this tool can also be used to attach or remove incandescent lamps. |

| Description | Type |
|---|---|
| Protection cover<br> <br>AF95-29 | **AR9E760**<br><br>This cover protects against accidental operation.<br>The cover lid is returned home with a spring force. (Packing is provided)<br><br>Used with:<br>AR22F0L, F5L, E0L, E5L, F0M, F5M, E0M, E5M, F0P, F5P, E0P, E5P<br>AR22F0R, F5R, E0R, E5R, F0S, F5S, E0S, E5S, E0Y, E5Y, F0Y, F5Y, FAR, FBR, EAR, EBR<br><br>Dimensions, mm:<br>  |
| Cover for preventing operating errors with 30mm dia. types<br> <br>AF91-671 | **AR9E538**<br>Inadvertent operation can be prevented by fitting a transparent cover with chain in the clamp ring.<br><br>Used with:<br>AR30F0R, F5R, E0R, E5R, E0L, E5L<br><br>Dimensions, mm:<br>  |
| Cover for preventing operating errors with 30mm dia. types<br> <br>.AF93-420 | **AHX408**<br>This is a metallic cover for preventing inadvertent operation.<br><br>Used with: AR30F0R, F5R<br><br>Dimensions, mm:<br>  <br>When attaching the cover to a vertical panel, if you attach it so that the portion indicated by an "A" is at the upper right, the stopper causes the cover to stop above the push button to halt further rotation.<br><br>The material is steel (zinc plated). |

| Description | Type |
|---|---|
| Key washer for AR22, DR22<br> <br>AF95-25 | **AR9Y715**<br>Use this metal washer when securing a operator in a 22.3mm dia. panel cutout hole.<br><br>Dimensions, mm:<br>  <br>• When the periphery of the panel cutout has a hole to stop rotation, use with side A contacting the panel (except for Joy stick selector types).<br>• Even when the periphery of the panel cutout does not have a hole to stop rotation, if used with side B contacting the panel it can serve as a washer for eliminating play (except for Joy stick selector types). |
| Key washer for ø30<br> <br>SC-1016 | **AHX082**<br>Use this metal washer when securing an operator in a 30.5mm dia. panel cutout hole.<br><br>Dimension, mm:<br>  |
| Operator base cover<br> <br>AF95-26 | **AR9Y002**<br>Attach this cover to the operator base of a pushbutton switch with only one contact block (1NO or 1NC) to protect against dust. |
| Adapter for AR22, DR22<br> <br>.AF95-28 | **AR9Y718**<br>Use this resin adapter to mount the AR22/DR22 (switch/pilot light) in a 25.5mm dia. cutout hole on a panel.<br><br>Dimensions, mm:<br>  |

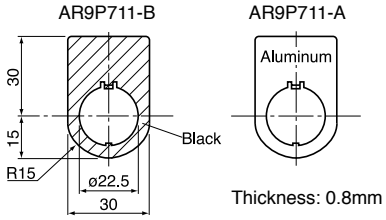
| Description | Type |
|---|---|
| Adapter for AR22 and DR22 AF98-198 | **AR9Y008**<br>Use this resin adapter to mount the AR22/DR22 (switch/pilot light) in a 25.5mm dia. cutout hole on a panel.<br><br>Mounting, mm:<br>  <br>Panel cutout, mm: ø4.5 ±0.2<br>  <br>Equipped with device for stopping rotation<br>Used with:<br>AR22, DR22 round head types<br>(except for M3R, M8R, VG□, joy stick selectors and buzzers)<br><br>Dimensions, mm:<br>  |
| Adapter for AR30 and DR30 AF95-416 | **AR9Y003**<br>Mount this adapter onto a 22mm dia. command switch with a square button and a square bezel to obtain a 30mm dia. command switch with a square/round button and a square bezel.<br>A resin ring-packing and a nut are accessories of the adapter.<br><br>Dimensions, mm:<br>  <br>Note: Panel thickness: 2.5 to 5mm |

| Description | Type |
|---|---|
| Round-frame adapter for 30mm dia. types KK02-100A | **AR9Y004**<br>By using this adapter in combination with the round type 22mm dia. command switch, the 22mm dia. command switch can be used as a 30mm dia. command switch/round frame type.<br><br>Used with:<br>AR22, DR22 round types<br>(except for M3R, M8R,VG□, Joy stick selectors, buzzers)<br><br>Dimensions, mm<br>  <br>Note: Panel thickness: 2.5 to 5mm |
| Round-frame adapter for 30mm dia. type VG AF93-4 | **AHX958**<br>Using this adapter in combination with model AR22VG (22mm dia.) allows mounting to a 30.5mm panel cutout hole. The attachment method is as follows.<br><br>• The washer and nut (22.3mm dia.) originally attached to the operator will not be used, so remove them.<br>• Attach the 22mm dia. packing (included), the 30mm dia. adapter and the 30mm dia. packing to the operator in that order, and insert the operator into the cutout hole.<br>• From the back of the panel cutout hole, fasten the 30mm-dia. nut using the AHX701 wrench. The correct tightening torque is 1 to 1.5 N•m.<br>  <br>*1 Adapter for 30mm dia. (AHX958)<br><br>Panel cutout, mm:<br>  <br>Dimensions, mm:<br>  <br>Note: Panel thickness: 1 to 6mm |

| Description | Type |
|---|---|
| Legend plate for AR22 | **AR9P711-**①②③<br>① Color<br>B: Black<br>A: Aluminum<br>This aluminum legend plate is for a 22.3mm dia. panel cutout hole. (Packing provided) |

| Legend | Code ② | Code ③ |
|---|---|---|
| Blank | 0 | 0 |
| ON | 0 | A |
| OFF | 0 | B |
| START | 0 | C |
| STOP | 0 | D |
| OFF-ON | 2 | A |

Dimensions, mm:



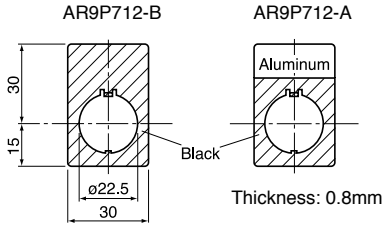

Thickness: 0.8mm

SI-1033

| Description | Type |
|---|---|
| Legend plate for AR22 | **AR9P712-**①②③<br>① Color<br>B: Black<br>A: Partially black<br>This aluminum legend plate is for a 22.3mm dia. panel cutout hole. (Packing provided) |

| Legend | Code ② | Code ③ |
|---|---|---|
| Blank | 0 | 0 |
| ON | 0 | A |
| OFF | 0 | B |
| START | 0 | C |
| STOP | 0 | D |
| OFF-ON | 2 | A |

Dimensions, mm:




Thickness: 0.8mm

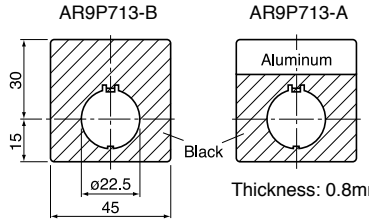
SI-1032

| Description | Type |
|---|---|
| Legend plate for AR22 | **AR9P713-**①②③<br>① Color<br>B: Black<br>A: Partially black<br>This aluminum legend plate is for a 22.3mm dia. panel cutout hole. (Packing provided) |



| Legend | Code ② | Code ③ |
|---|---|---|
| Blank | 0 | 0 |
| ON | 0 | A |
| OFF | 0 | B |
| START | 0 | C |
| STOP | 0 | D |
| OFF-ON | 2 | A |

Dimensions, mm:



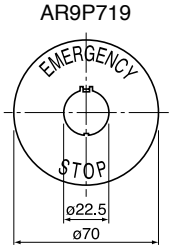

Thickness: 0.8mm

AF95-114

| Description | Type |
|---|---|
| Legend plate for AR22 emergency stop | **AR9P719-**①②<br>Plate color: Yellow<br>Letter color: Black<br>This aluminum legend plate is for a 22.3mm dia. panel cutout hole. (Packing provided) |

| Legend | Code ① | Code ② | Letter hight |
|---|---|---|---|
| Blank | 0 | 0 | – |
| EMERGENCY STOP | 5 | A | 7mm |
| | 5 | B | 13mm |
| EMERGENCY OFF | 5 | C | 13mm |

Dimensions, mm:




Thickness: 0.8mm

KK02-265A

Note: Engraving for making letters is not available.

| Description | Type |
|---|---|

**Legend plate for AR22 (width: 34mm)**

**AR9P015-B**①② : Hight 36mm
**AR9P014-B**①② : Hight 40.3mm

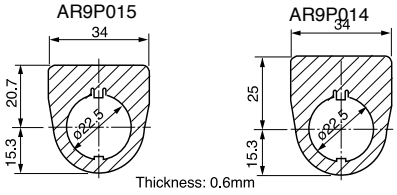
Color: black

| Legend | code ① | ② |
|---|---|---|
| Blank | 0 | 0 |
| ON | 0 | A |
| OFF | 0 | B |
| START | 0 | C |
| STOP | 0 | D |
| OFF-ON | 2 | A |

.AF96-190

Optimal for use in combination with a 3-position selector switch.
Legend plates are available in two types: short, 36 mm; and long, 40.3mm.

Dimensions, mm:




**Legend plate with name plate for AR22**

Legend plate **AR9P009-B**
Name plate **AR9P010-B** ①② (34 × 8mm)

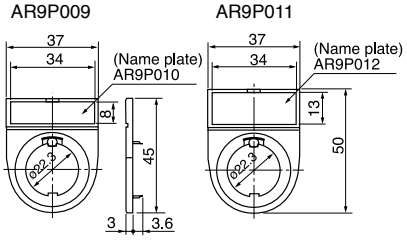
Legend plate **AR9P011-B**
Name plate **AR9P012-B** ①② (34 × 13mm)

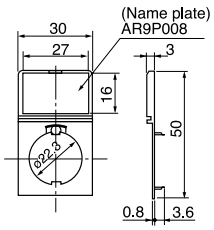
Legend plate **AR9P007-B**
Name plate **AR9P008-B** ①② (27 × 16mm)

| Name plate | Code ① | ② |
|---|---|---|
| ON | 0 | A |
| OFF | 0 | B |
| START | 0 | C |
| STOP | 0 | D |
| OFF-ON | 2 | A |

.AF96-190

Dimensions, mm:




| Description | Type |
|---|---|

**Legend plate for AR30**

**AHX177-**①②③④
① Material and color

This legend plate is for a 30.5mm dia. panel cutout hole.

| Code | Material | Color |
|---|---|---|
| S | Brass | Silver |
| B | Aluminum | Black |
| A | | Aluminum |

Y-1545

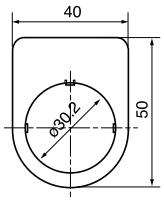
② Size
H: Standard
S: Short size

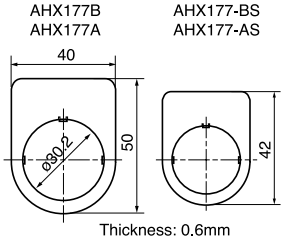
| Legend | Code ③ | ④ |
|---|---|---|
| Blank | 0 | 0 |
| ON | 0 | A |
| OFF | 0 | B |
| START | 0 | C |
| STOP | 0 | D |
| OFF-ON | 2 | A |

AF89-466

Dimensions, mm:

AF87-49




**Legend plate for AR30 emergency stop**

**AHX720-**①②

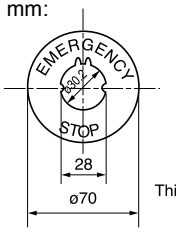
Plate color: Yellow
Letter color: Black

This aluminum legend plate is for a 30.5mm dia. panel cutout hole.

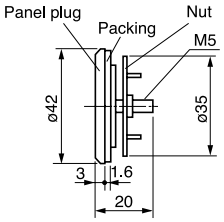
| Legend | Code ① | ② | Letter hight |
|---|---|---|---|
| Blank | 0 | 0 | – |
| EMERGENCY STOP | 5 | A | 7mm |

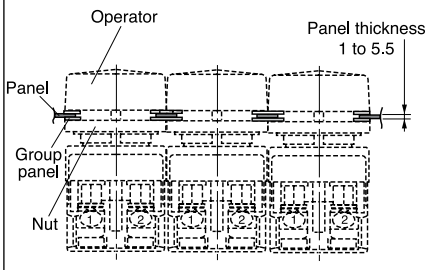
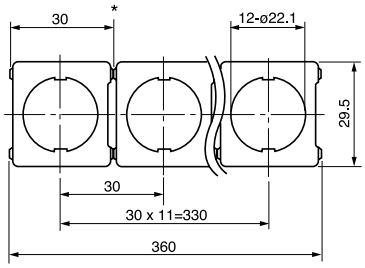
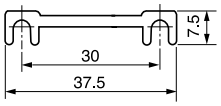
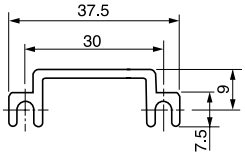
SK-598

Dimensions, mm:




Note: Engraving for making letters is not available.

| Description | Type |
|---|---|
| Panel plug for AR22 and DR22<br> <br>SI-1027 | Round:<br>**AHX725-B** Black<br>**AHX725-H** Gray<br><br>Square:<br>**AHX726-B** Black<br>**AHX726-H** Gray<br><br>Dimensions, mm: ø29.5 x 17 (AHX725)<br>29.5 sq. x 17 (AHX726)<br>Use this plug to cover up unused panel cutout holes.<br>For oil proof usage, use together with packing (AR9Y730) and a nut (AR9R744). |
| Panel plug for AR30 and DR30<br> <br>T-1993 | **AHX004**<br><br>Color: Silver (metal)<br>This plug is used to cover up unused panel cutout hole.<br><br>Dimensions, mm:<br>  <br> |

| Description | Type |
|---|---|
| Group panel for 22mm dia. type<br> <br>AF97-233 | **DR9Y004**<br>These new 22mm dia. command switch/ square types can be neatly aligned side by side on this group panel at a 30mm pitch to form a uniform panel face with no misalignment between mounted switches. Depending on the number of switches to be grouped (maximum 12), the panel can be divided (by cutting at the portion indicated by an asterisk (*)).<br><br>Mounting, mm:<br>(example showing a group of three)<br>  <br><br>Dimensions, mm:<br>  <br><br>Thickness: 0.8mm |
| Jumper<br> <br>AF95-153<br> <br>AF95-27 | **APCX029** (For pilot light without transformer)<br>**DR9Y001** (For pilot light with transformer)<br><br>Use this jumper to connect terminals allocated in a 30mm pich.<br>Rated current is 3A<br><br>Dimensions, mm<br>APCX029<br>  <br><br>DR9Y001<br>  <br><br>Thickness: 0.5mm |

# AR22/DR22 and AR30/DR30 Accessories

## Lens for illuminated pushbutton switch and pilot lights

AF94-458

| Type | Used with |
|---|---|
| **AR9C011-□**[*1] | AR22F0L, F5L, F0P, F5P |
| **AR9C012-□**[*1] | AR22E0L, E5L, E0P, E5P<br>AR22G1L, G2L, G4L, G6L, G7L, G9L<br>DR22E3L, E3P<br>AR30E0L, E5L, G2L, G3L, G4L, G7L, G8L, G9L<br>DR30E3L |
| **AR9C013-□**[*1] | AR22F0M, F5M |
| **AR9C014-□**[*1] | AR22E0M, E5M<br>DR22E3M, F5M |
| **AR9C015-□** | AR22M4L, M4P |
| **AR9C016-□** | AR22M0L, M5L |
| **DR9C001-□** | DR22D0L<br>DR30D0L*[2] |
| **DR9C002-□** | DR22K0L<br>DR30K0L*[2] |
| **DR9C120-C** | DR30M4M |
| **DR9C121-C** | DR30F4N |
| **DR9C122-C** | DR30F4M |
| **DR9C126-□**[*1] | DR22F3M |
| **DR9C126-C** | DR22F4M |
| **DR9C127-□**[*1] | DR22E3N |

Replace the □ mark by the lens color code

| Color | Green | Red | Clear | Yellow |
|---|---|---|---|---|
| Code | G | R | C | Y |

| Color | Orange | Blue | White |
|---|---|---|---|
| Code | A | S | W |

Notes: *[1] When the main unit code is "W" (white), use a lens of clear color.
*[2] Except for pilot lights with resistor

## Button for pushbutton switch

AF94-461

KK02-101A

KK02-102A

KK02-103A

| Type | Used with |
|---|---|
| **AR9C001-□** | AR22F0R, F5R, F0Y, F5Y, G2R, G7R<br>AR30F0R, F5R, FVR<br>AR22S1R, S2R, S3R, S6R<br>AR30S1R, S2R, S3R, S6R |
| **AR9C003-□** | AR22E0R, E5R, G0R, G3R, G5R, G8R<br>AR22E0Y, E5Y<br>AR30E0R, E5R, G0R, G1R, G5R, G6R |
| **AR9C004-□** | AR22F0S, F5S |
| **AR9C005-□** | AR22E0S, E5S |
| **AR9C006-□** | AR22M4R, M9R, M4Y<br>AR30M4R |
| **AR9C007-□** | AR22M0R, M5R<br>AR30M0R, M3R, M5R, M8R |
| **AR9C024-□** | AR30B0R, B1R, B2R, B3R |
| **AR9C027-C** | AR22FAR, FBR, AR30FAR, FBR |
| **AR9C028-C** | AR22EAR, EBR, AR30EAR, EBR |
| **AR9C041-R** | AR30N0R |
| **AHX539-1** | Cap for AR30FVR |

Replace the □ mark by the button color code

| Color | Green | Red | Black | White |
|---|---|---|---|---|
| Code | G | R | B | W |

| Color | Yellow | Orange | Blue |
|---|---|---|---|
| Code | Y | A | S |

## Center button (For V type)

AF95-32

| Type | Used with |
|---|---|
| **AR9C020-R** | AR22V0R, V2R, VSR<br>AR30V0R, V2R |
| **AR9C020-□** | AR22V5R, AR30V5R |
| **AR9C018-R** | AR22V0L, V2L, VDL, VAL, VSL<br>AR30V0L, V2L |
| **AR9C018-□** | AR22V5L*, AR30V5L* |

Replace the □ mark by the button color code

| Color | Red | Black | Yellow |
|---|---|---|---|
| Code | R | B | Y |

Note: * V5L: Red and yellow only

## Push-lock, turn-reset button (V and Q types)

AF95-31

KK02-104A

| **Type** | Used with |
|---|---|
| **AR9C008-R** | AR22V4R |
| **AR9C010-R** | AR22Q2R, AR30Q2R |
| **AR9C017-R** | AR22V2R, V2L, AR30V2R, V2L |
| **AR9C019-R** | AR22VAL |
| **AR9C021-R** | AR22V0R, V0L, AR30V0R, V0L |
| **AR9C021-□** | AR22V5R, V5L*, AR30V5R, V5L* |
| **AR9C026-R** | AR22VDL |
| **AR9C029-R** | AR30V1R |
| **AR9C040-R** | AR22VSR, VSL |

Replace the □ mark by the button color code

| Color | Red | Black | Yellow |
|---|---|---|---|
| Code | R | B | Y |

Note: * V5L: Red and yellow only

## Knob

AF95-43

| Type | Used with |
|---|---|
| **AR9M006-□** | AR22PR, PCR, PY, PCY<br>AR30PR, PCR |

Replace the □ mark by the knob color code

| Color | Black | Green | Red |
|---|---|---|---|
| Code | B | G | R |

## Lever

AF95-42

| Type | Used with |
|---|---|
| **AR9M007-□** | AR22WR, WCR, WY, WCY<br>AR30WR, WCR |

Replace the □ mark by the lever color code

| Color | Black | Green | Red |
|---|---|---|---|
| Code | B | G | R |

## Cylindrical knob

AF95-44

| Type | Used with |
|---|---|
| **AR9M008-□** | AR22RR, RCR, RY, RCY |

Replace the □ mark by the knob color code

| Color | Black | Green | Red |
|---|---|---|---|
| Code | B | G | R |

| Description | Type |
|---|---|

**Knob (for illuminated selector switch)**

AF94-465

| Type | Used with |
|---|---|
| **AR9M005-□** | AR22PL, PP<br>AR30PL |

Replace the □ mark by the knob color code

| Color | Green | Red | White |
|---|---|---|---|
| Code | G | R | W |

| Color | Yellow | Orange | Blue |
|---|---|---|---|
| Code | Y | A | S |

**Key**

AF94-464

| Type | Used with |
|---|---|
| **AR9C022-□** | AR22JR, JCR, AR30JR, JCR, |
| **AR9C025-□** | AR22JAR, AR30JAR |

Replace the □ mark by the key type code.
Code: A, B, C, D, E or F, 6 types.

**Legend plate (for F type with round bezel)**

AF94-459

**AR9P001-W**

This part is made of acrylic resin.
Use paint or thinner compatible with resin.

Dimensions, mm: ø17.8 x 0.9

**Legend plate (for E type with round bezel)**

AF94-459

**AR9P002-W**

This part is made of acrylic resin.
Use paint or thinner compatible with resin.

Dimensions, mm: ø19.7 x 4.2

**Symbol mark plate**

AF98-197

| Type | Used with |
|---|---|
| **AR9P019-□□■** | AR22FAR, FBR, AR30FAR, FBR |
| **AR9P020-□□■** | AR22EAR, EBR, AR30EAR, EBR |

**□□■ :**

| Symbol | ○ | | I | | Ⓣ | | ○ | I | Ⓣ |
|---|---|---|---|---|---|---|---|---|---|
| Plate | W | B | W | B | W | B | Clear | | |
| Symbol | Red | | Green | | Green | | Black | | |
| Code | 01 | 02 | 03 | 04 | 11 | 12 | 02B | 04B | 12B |

W: White, B: black

| Description | Type |
|---|---|

**Legend plate and color plate (for F type with square bezel)**

AF94-460

KK02-105A

KK02-106A

KK02-107A

• Legend plate

| Type | Used with |
|---|---|
| **DR9P241-W** | AR22F0M, F5M |
| | DR22F3M, F4M |
| **DR9P242-WP** | DR30M4M |
| **DR9P242-W** | DR30M4M, LED(W) |
| **DR9P243-WP** | DR30F4N |
| **DR9P243-W** | DR30F4N, LED(W) |
| **DR9P244-WP** | DR30F4M |
| **DR9P244-W** | DR30F4M, LED(W) |

Types DR9P242, 243 and 244-W are LED illuminated, and used exclusively with operators having a “W” in the type number.

• color plate

| Type | Used with |
|---|---|
| **DR9P241-□** | DR22F3M, F4M |
| **DR9P242-□** | DR30M4M |
| **DR9P243-□** | DR30F4N |
| **DR9P244-□** | DR30F4M |

Replace the □ mark by the color code

| Color | Green | Red | White |
|---|---|---|---|
| Code | G | R | W |

| Color | Yellow | Orange | Blue |
|---|---|---|---|
| Code | Y | A | S |

This part is made of acrylic resin.
Use paint or thinner compatible with resin.

Dimensions, mm:
DR9P241: 20.8 sq. x 0.8
DR9P242: 33.4 sq. x 1
DR9P243: 33.4 x 27.4 x 1
DR9P244: 27.4 sq. x 1

**Legend plate (for E type with square bezel)**

AF94-460



AF94-460

| Type | Used with |
|---|---|
| **AR9P003-W** | AR22E0M, E5M |
| | DR22F5M, E3M |
| **DR9P001-W** | DR22E3N |

This part is made of acrylic resin.
Use paint or thinner compatible with resin.

Dimensions, mm:
AR9P003-W: 20 sq. x 4.8
DR9P001-W: 19.7 x 26.7 x 4.5

**Legend sheet**

AF95-34

**AHX727**

Affix this seal to the DR9P241-□/AR9P003 legend plate for marking or labeling.

Dimensions, mm: 20 sq. x 0.025

| Description | Type |
|---|---|

**LED lamp**

KK02-109A

| Type | Lamp voltage |
|---|---|
| **APX510-6 □** | 6V AC |
| **APX510-D6 □** | 6V DC |
| **APX510-12 □** | 12V AC/DC |
| **APX510-15 □** | 15V AC/DC |
| **APX510-24 □** | 24V AC/DC |

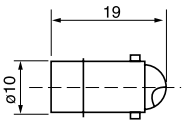
Replace the □ mark by the luminous color code

| Luminous color | Yellow | Red | Green |
|---|---|---|---|
| Code | Y | R | G |
| Lens color | Y | R | G |

| Luminous color | Amber | Orange | Blue |
|---|---|---|---|
| Code | A | O | S |
| Lens color | A | W, A* | S |

* Orange is available only for the DR22F4M pilot light.

Dimensions, mm:




Lamp base: BA9s/13

**LED lamp (for DR30 with resistor)**

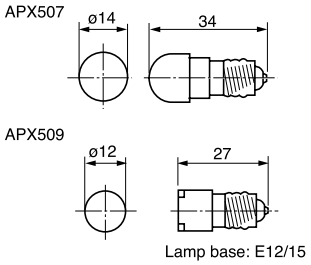
KK02-110A

KK02-111A

| Type | Lamp voltage |
|---|---|
| **APX507-24 □**<br>**APX509-24O** | 24V AC/DC |

Note:
The symbol in the box indicates the color of light emitted. (See note APX510.)
When the code is "W" (white), use an LED lamp ((APX.509-24O)

Dimensions, mm:




Lamp base: E12/15

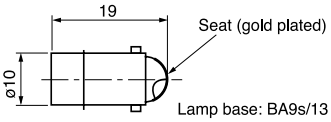
**LED lamp (for AR22VGF type)**

KK02-109A

| Type | Lamp voltage |
|---|---|
| **AR9L002-ER** | 24V AC/DC |

Luminous color: Red

Dimensions, mm:




Lamp base: BA9s/13

Do not use the LED lamp for other types.

| Description | Type |
|---|---|

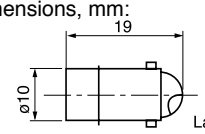
**Neon lamp (for AR22VGF type)**

KK03-038

| Type | Lamp voltage |
|---|---|
| **AR9N001-HA** | 110V AC |
| **AR9N001-KA** | 120V AC |
| **AR9N001-MA** | 220V AC |
| **AR9N001-PA** | 240V AC |

Luminous color: Orange

Dimensions, mm:




Lamp base: BA9s/13

Do not use the LED lamp for other types.

**LED unit for DR30 (square type)**

KK02-112A

.KK02-113A

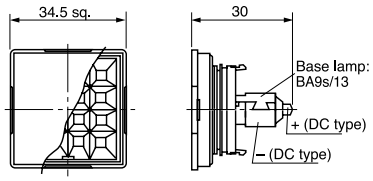
| Type | Lamp voltage | Used with |
|---|---|---|
| **DR9Q001-6 □** | 6V DC | DR30M4M |
| **DR9Q001-2 □** | 12V AC | |
| **DR9Q001-B □** | 12V AC/DC | |
| **DR9Q001-E □** | 24V AC/DC | |
| **DR9Q002-6 □** | 6V DC | DR30F4N |
| **DR9Q002-2 □** | 12V AC | |
| **DR9Q002-B □** | 12V AC/DC | |
| **DR9Q002-E □** | 24V AC/DC | |
| **DR9Q003-6 □** | 6V DC | DR30F4M |
| **DR9Q003-2 □** | 12V AC | |
| **DR9Q003-B □** | 12V AC/DC | |
| **DR9Q003-E □** | 24V AC/DC | |

Replace the □ mark by the luminous color code

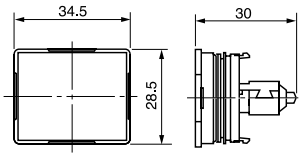
| Luminous color | Yellow | Red | Orange | Amber |
|---|---|---|---|---|
| Code | Y | R | O | A |
| Lens color | G, Y | R | W | A |

Dimensions, mm:

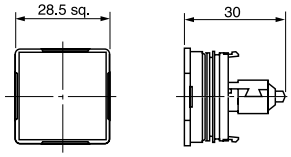
DR9Q001-□□




DR9Q002-□□




DR9Q003-□□

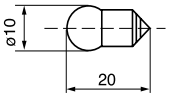


| Description | Type |
|---|---|
| Incandescent lamp | |

AF89-427

| Type | Lamp voltage | Rated voltage, consumption |
|---|---|---|
| **AHX135** | 5.5V AC/DC | 6.3V AC/DC, 1W |
| **AHX279** | 15V AC/DC | 18V AC/DC, 1W |
| **AHX144** | 20V AC/DC | 24V AC/DC, 1W |
| **AHX129** | 24V AC/DC | 30V AC/DC, 1W |

Dimensions, mm:



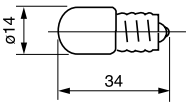

Lamp base: BA9s/13

| Description | Type |
|---|---|
| Incandescent lamp (for DR30 with resistor) | |

KK02-115A

| Type | Lamp voltage | Rated voltage, consumption |
|---|---|---|
| **AHX130** | 15V AC/DC | 18V AC/DC, 2W |

Dimensions, mm:




Lamp base: E12/15

| Description | Type |
|---|---|
| Contact block (1NO) | **AR9B290** Standard<br>**AR9B290-S** Overlap<br><br>Color: Blue<br>Dimensions, mm: 19.3 x 29 x 27<br><br>Note: Terminal cover is not supplied with this. |

AF94-455

| Description | Type |
|---|---|
| Contact block (1NC) | **AR9B291** Standard<br>**AR9B291-S** Overlap<br><br>Color: Red<br>Dimensions, mm: 19.3 x 29 x 27<br><br>Note: Terminal cover is not supplied with this. |

AF94-455

| Description | Type |
|---|---|
| Lamp terminal | **AR9B292**<br><br>Color: Black<br>Dimensions, mm: 19.3 x 29 x 27<br><br>Note: Terminal cover is not supplied with this. |

AF94-456

| Description | Type |
|---|---|
| Contact protection cover | |

KK02-117A

KK02-118A

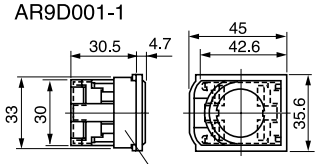
| Type | Used with * |
|---|---|
| **AR9D001-1** | AR22, 1-step contact |
| **AR9D001-2** | AR22, 2-step contact |
| **AR9D002-1** | AR30, 1-step contact |
| **AR9D002-2** | AR30, 2-step contact |

- The contact is covered with a silicon rubber cover to keep out foreign matter such as dust, etc.
- Section A of the AR9D001 is separate.

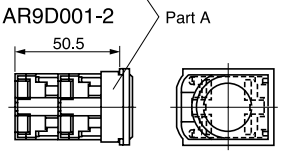
* *See page 119*, "AR22 □ Z8, AR30 □ Z8"

Dimensions, mm:

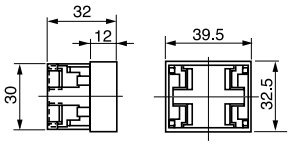
AR9D001-1



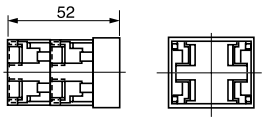

AR9D001-2




AR9D002-1




AR9D002-2




| Description | Type |
|---|---|
| Transformer unit | |

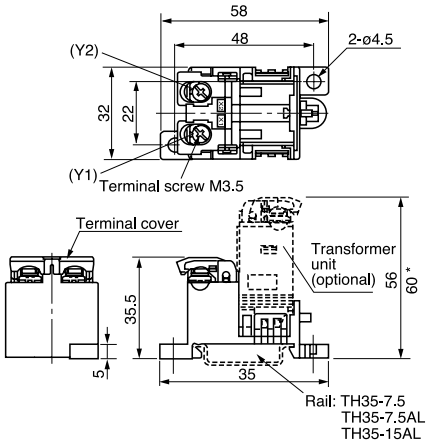
AF94-457

AF95-33

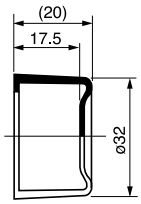
| Type | Primary voltage | Used with |
|---|---|---|
| **AR9T511-H** | 100-110V AC | Standard type (except buzzers) |
| **AR9T511-L** | 115-127V AC | |
| **AR9T511-M** | 200-220V AC | |
| **AR9T511-Q** | 230-254V AC | |
| **AR9T511-S** | 350-380V AC | |
| **AR9T511-T** | 400-440V AC | |
| **AR9T511-V** | 480V AC | |
| **AR9T511-W** | 500-550V AC | |
| **AR9T557-H** | 100-110V AC | DR30F4N, F4M, M4M |
| **AR9T557-L** | 115-127V AC | |
| **AR9T557-M** | 200-220V AC | |
| **AR9T557-Q** | 230-254V AC | |
| **AR9T557-S** | 350-380V AC | |
| **AR9T557-T** | 400-440V AC | |
| **AR9T557-V** | 480V AC | |
| **AR9T557-W** | 500-550V AC | |

Dimensions, mm:
Up to 220 V 22.4 x 30 x 45
Over 220 V 25.3 x 29 x 48

Note: With terminal cover

| Description | Type |
|---|---|
| Base unit for transformer separate mounting<br> <br>KK02-118A | **AR9T003**<br><br>Use this base in combination with a transformer unit. This base unit can be mounted using screws or rails.<br><br>Dimensions, mm<br>  <br><br>* Except for the types 110V AC, 127V AC and 220V AC. |
| Resistor<br>Voltage stabilizer<br>Device for LED lamp flickering<br> <br>AF95-33 | Resistor: **AR9T519-H** (110V DC)<br>Fit this resistor when using LED of 24V DC rating with 110V DC power.<br><br>Voltage stabilizer: **AR9T001-E**<br>This unit allows an LED lamp of 24V DC rating to be used in a circuit with voltage from 27V to 35V (AC or DC).<br><br>Flickering device:<br>6V AC: **AR9T002-A**<br>6V DC: **AR9T002-6**<br>12 to 24V AC: **AR9T002-G ***<br>12 to 24V DC: **AR9T002-E ***<br><br>* Used in combination with 12V, 15V, or 24V rated LED lamp.<br><br>Note: With terminal cover |
| Nut<br> <br>AF94-462<br> <br>KK2-119A | Type / Used with / Dimensions, mm<br>**AR9R744** / AR22, DR22* / ø29.7 x 4<br>**DR9R001** / DR30F4M, DR30F4N, DR30M4M / ø33.8 x 5<br><br>* Except AR22VG□, Joy stick selectors, buzzers and numerical indicators |

| Description | Type |
|---|---|
| Nut for 30mm dia. types (Resin types are black, metallic types are silver.)<br> <br>KK2-120A<br> <br>KK2-121A<br> <br>KK2-122A<br> <br>KK2-123A | **AR9R001:**Resin, black (standard)<br>**AHX088:** Metallic, silver<br><br>Used with:<br>AR30F0R, F5R, FAR, FBR, E0R, E5R, EAR, EBR, E0L, E5L, Q7L<br>DR30D0L, E3L, K0L<br><br>**AR9R002:** Resin, black (standard)<br>**AHX093 :** Metallic, silver<br><br>Used with:<br>AR30M0R, M5R, M4R, G0R, G5R, N0R, S□R, V□R, Q2R, V□L, PR, PCR, WR, WCR, JR, JCR, JAR, PL, A□N, A□H |
| Guard ring for 30mm dia Types<br> <br>AF94-462<br> <br>KK04-115A<br> <br>KK04-113C<br> <br>KK04-117C<br> <br>KK04-112B | **AR9R054-B**: Metallic, black<br>Used with: AR30G1R, G6R, G3L, G8L<br><br>**AR9R056-B**: Metallic, black<br>Used with: AR30G2L, G7L<br><br>**AR9R223-B**: Metallic, black<br>Used with: AR30M3R, M8R<br><br>**AR9R265-B**: Metallic, black<br>Used with: AR30B1R<br><br>**AR9R266-B**: Metallic, black<br>Used with: AR30B2R<br><br>**AR9R267-B**: Metallic, black<br>Used with: AR30B3R<br><br>**AR9R007**: Metallic, silver<br>Used with: AR30GSR<br><br>**AR9R003**: Silver metallic and transparent resin<br>Used with: AR30G4L<br><br>**AHX-054**: Metallic, silver<br>Used with: AR30G1R, G6R, G3L, G8L<br><br>**AHX-055**: Metallic, silver<br>Used with: AR30G2L, G7L |

| Description | Type |
|---|---|
| Water-tight cap for 22mm dia. types<br> <br>KK2-124A | **AR9D797-□**<br><br>This rubber cap protects the operator and switch mechanism against dust and water. Use this cap in a dusty or moist environment.<br><br>Used with:<br>AR22E0L,E5L<br>AR22E0R, E5R<br><br>Replace the □ mark by the luminous color code.<br><br>Code — Color<br>G — Green<br>R — Red<br>B — Black<br>Y — Yellow<br>Blank — Clear (standard)<br><br>Dimensions, mm:<br>  |
| Water-tight cap for 30mm dia. types<br> <br>Y-1559 | **AHX052**<br><br>This rubber cap protects the operator and switch mechanism against dust and water. Use this cap in a dusty or moist environment. The only color available is transparent.<br><br>Used with:<br>AR30E□R, E□L<br><br>Dimensions, mm: ø36 x 22.5 |

| Description | Type |
|---|---|
| Dust-proof cap for 30mm dia. types | |

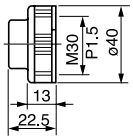
SC-993

AF89-772

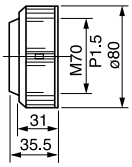
| Type | Color | Used with | Spec. |
|---|---|---|---|
| **AHX032** | Red | AR30E0R | Oil-proof |
| **AHX033** | Green | | |
| **AHX034** | Black | | |
| **AHX041** | Red | AR30F0R | Oil-proof |
| **AHX042** | Green | | |
| **AHX043** | Black | | |
| **AHX157-R** | Red | AR30B2R, B3R | Oil-proof |
| **AHX157-G** | Green | | |
| **AHX157-B** | Black | | |
| **AHX113-R** | Red | AR30E0R | Weather resistance |
| **AHX113-G** | Green | | |
| **AHX113-B** | Black | | |
| **AHX111-R** | Red | AR30F0R | Weather resistance |
| **AHX111-G** | Green | | |
| **AHX111-B** | Black | | |

Dimensions, mm:

AHX032 to 034, 041 to 043
AHX111, 113




AHX157




Used for sealing the operator from foreign debris such as dust, oil (oil-proof), and water (weather resistance) in environments where the unit is in contact with such elements.

| Description | Type |
|---|---|
| Packing | |

AF94-462

KK2-125A

**AR9Y730:**
AR22 and DR22 (Rubber)

Note: Except for joystick selector switches, buzzers

**AHX282:**
AR30 and DR30 (Resin-standerd)

Note: Except for DR30F4M, F4N, M4M, numerical indicators

**AHX149:**
AR30 and DR30 (Rubber)

Note: Except for DR30F4M, F4N, M4M, numerical indicators

| Description | Type |
|---|---|
| Terminal cover | |

AF94-466

KK2-126A

| Type | Used with | Dimensions, mm |
|---|---|---|
| **AR9Y305** | Contact unit<br>Lamp terminal<br>Transformer unit *1 | 18.4 x 29 x 8.4 |
| **DR9Y320** | Pilot lights *2<br>(without transformer) | ø22 x 5.8 |
| **DR9Y321** | DR30F4M, F4N, M4M<br>(without transformer) | 34 sq. x 8.7 |

*1 Applicable up to 220V.
*2 DR22D0L, E3L, K0L, F□M, E3M, E3N, E3P, DR30D0L, E3L, K0L

The terminal cover is provided as standard with the applicable types listed above. (Except for joy stick selector switches, numerical indicators, pilot lights with resistors, contact block alone and lamp terminal alone)

| Description | Type |
|---|---|
| Terminal cover | |

AHX305
SG-842

AHX426
AF92-339

AHX376
SG-5

| Type | Used with | Dimensions, mm |
|---|---|---|
| **AHX305** | Buzzers<br>(without transformer) | 23.5 x 27.5 x 16 |
| **AHX426** | DR30D1L<br>(without transformer) | 27.5 x 31 x 8 |
| **AHX376** | DR30D1L<br>(with transformer)<br>Buzzers (B0 type)<br><br>With transformer *<br>With short-body transformer<br>With resistor unit | 13 x 29 x 6.5 |

* 230V and over

The terminal cover is provided as standard with the applicable types listed above.

## Products equipped with contact protection cover

### ■ Features

A silicon rubber cover is provided for the contact block to keep out foreign matter such as dust, etc.
Other ratings and specifications are the same as those of the standard type.

### ■ Type

**AR22 □ Z8**
**AR30 □ Z8**
Specify “Z8” at the end of the type number of the standard type.

### ■ Dimensions

The only thing different from the standard product is the addition of a 1-mm thick silicon rubber cover around the contact block.

### ■ Applicable types

| Type | Contact arrangement | Remarks |
|---|---|---|
| • Pushbuttons *1<br>• Emergency stop pushbuttons *2<br>• Selectors | 1NO+1NC,<br>2NO*4, 2NC | For use with a 1-step contact |
| | 1NO+3NC, 2NO+2NC,<br>3NO+1NC, 4NO*4, 4NC | For use with a 2-step contact |
| • Illuminated pushbuttons *3 (without transformer) | 1NO*5, 1NC | For use with a 1-step contact |
| • Emergency stop illuminated pushbuttons*2 (without transformer)<br>• Illuminated selectors (without transformer) | 1NO+2NC, 2NO+1NC,<br>3NO*5, 3NC | For use with a 2-step contact |

Notes: *1 Except for AR30B0R, B1R, B2R, B3R, N0R, and GPR.
*2 Except for unibody (VG types)
*3 Except for AR30Q7L
*4 Except for emergency stop pushbutton switch
*5 Except for emergency stop illuminated pushbutton switch

## Resisting water-soluble cutting oils and heat

### ■ Features

Safer operation in environments exposed to water-miscible cutting fluids, machining oils, lubricating oils, cleaning oils and high humidity (up to 95%) is made possible by using materials that protect against rust and corrosion of components.
Other ratings and specifications are the same as those of the standard type.

### ■ Type

**AR22 □ Z9, DR22 □ Z9**
**AR30 □ Z9, DR30 □ Z9**
Specify “Z9” at the end of the type number of the standard type.

### ■ Dimensions

Same as those of the standard type

### ■ Applicable types

• AR22, DR22 series
AR 22 (Except for joy stick selectors and VG types)
DR22 (Except for pilot lights with resistor unit, buzzers, and numerical indicators)

• AR30, DR30 series
AR30 (Except for Q7L types and joy stick selectors)
DR30 (Except for D1L, F4M, F4N, M4M types, pilot lights with resistor/resistor unit, buzzers, and numerical indicators)

## Meeting IP2X finger protection standards

### ■ Features
Conforms to EN standard EN60204-1 (protecting against electric shock). The terminal has IEC60529 degree of protection; IP2X finger protection secured (a mock human finger used in testing did not come into contact with charged parts). The contact block and lamp terminal can be easily mounted or removed with the terminal cover mounted.

### ■ Type
**AR22 □ ZB, DR22 □ ZB**
**AR30 □ ZB, DR30 □ ZB**
Specify “ZB” at the end of the type number of the standard type.

### ■ Accessories
• Contact block (plus terminal cover)
NO contact: AR9B290-D
NC contact: AR9B291-D
•Transformer unit (plus terminal cover)
AR9T511-□ D

### ■ Ratings and specifications
• Protection degree: IP2X
• Terminal screw: M3.5
Wiring can be done with a solid wire or fork shaped crimp terminal.

Note: Ring-type crimp terminals cannot be used.

• Other ratings and specifications are the same as those of the standard type.

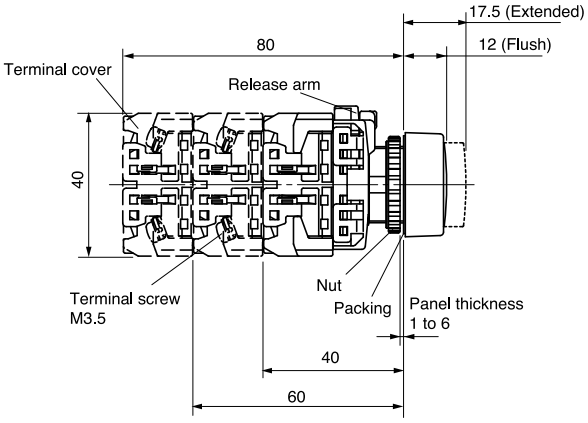
### ■ Applicable types
• AR22, DR22 series
AR22 (except for joy stick selectors)
DR22: Without transformer, with transformer (except for short-body types, buzzers and numerical indicators)

• AR30, DR30 series
AR30 (except for joy stick selectors)
DR30: Without transformer, with transformer (except for D1L, short-body types, F4M, F4N, M4M types, buzzers and numerical indicators)

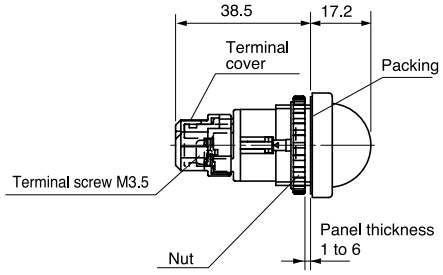
Note: The terminal of the standard type VG has IP2X protection.

### ■ Dimensions, mm

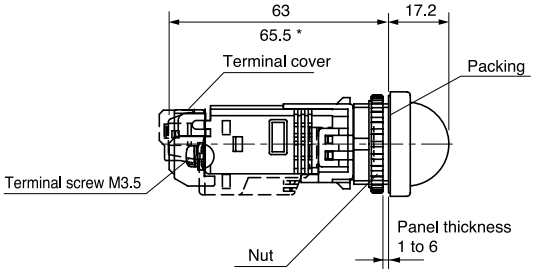
AR22/Pushbutton switches




DR22/Without transformer




DR22/With transformer




Note: * Except for the types 110V AC, 127V AC and 220V AC.

## Metal nut (chrome plated) types

**■ Features**
The nut is a metallic ring (chrome plated).
Other ratings and specifications are the same as those of the standard model.

**■ Type**
**AR30 □ ZM**
**DR30 □ ZM**
Specify "ZM" at the end of the type number of the standard type.

**■ Dimensions, mm**
Same as those of the standard types.

**■ Applicable types**
• AR30, DR30 series
AR30 (except for G4L, G9L, GSR*1, GPR*1, and B0R*1 types)
DR30 with round bezel (except for IP54 buzzer type B8)*2

Notes: *1 Standard type is a metallic ring (chrome plated).
*2 The nut of types DR30B0, B5 and B6 buzzers are resin (chrome plated).

KK02-147A
**AR30E0R □ ZM**

KK02-148A
**AR30PR □ ZM**

KK02-149A
**DR30D0L □ ZM**

## Resisting sulfuration gas

**■ Features**
These products can be used in environments having a concentration of hydrogen sulfide gas of 0.5 ppm or less.
The metallic parts have been subjected to an anti-corrosion treatment (see note).
The contacts of the AR series are gold plated.

Note: The body is made of resin and cannot be used with gases that affect resins (plastics).

**■ Type**
**AR22 □ Z4, DR22 □ Z4**
**AR30 □ Z4, DR30 □ Z4**
Specify "Z4" at the end of the type number of the standard type.

**■ Notes on use**
• This product is resistant to light corrosive gas exposure.
• Other measures, such as covering the entire switch with a box, and the degree of protection of the panel should be taken into consideration.

**■ Ratings and specifications**
Hydrogen sulfide gas concentration of 0.5 ppm max.
Ambient storage temperature: 8 to 37°C
Humidity: 62 to 81%
Other ratings and specifications are the same as those of the standard type.

**■ Dimensions, mm**
Same as those of the standard types.

**■ Applicable types**
• AR22, DR22 series
AR22 (except for Joy stick selectors and VG type)
DR22 (except for pilot lights with resistor unit, buzzers, and numerical indicators)

• AR30, DR30 series
AR30 (except for Joy stick selectors)
DR30 (except for F4M, F4N, M4M types, pilot lights with resistor/resistor unit, buzzers and numerical indicators)

# AR22 and DR22
# Mass

## ■ Mass, gram

### ● Illuminated pushbuttons

| Type | Without transformer | | | With transformer * | |
|---|---|---|---|---|---|
| | 1NO (1NC) | 2NO (2NC) (1NO+1NC) | 2NO+2NC | 1NO (1NC) | 2NO (2NC) (1NO+1NC) |
| AR22F0L | 39 | 48 | 67 | 85 | 94 |
| F5L | 39 | 48 | – | 85 | 94 |
| F0M, F0P | 40 | 49 | 68 | 86 | 95 |
| F5M, F5P | 40 | 49 | – | 86 | 95 |
| E0L | 41 | 50 | 69 | 87 | 96 |
| E5L | 41 | 50 | – | 87 | 96 |
| E0M, E0P, M4L, G1L, G2L, G4L | 42 | 51 | 70 | 88 | 97 |
| E5M, E5P, M9L, G6L, G7L, G9L | 42 | 51 | – | 88 | 97 |
| M4P | 43 | 52 | 71 | 89 | 98 |
| M0L | 44 | 53 | 72 | 90 | 99 |
| M5L | 44 | 53 | – | 90 | 99 |
| V5L | 48 | 57 | – | 94 | 103 |

Note: * 230V and over : +17grams

### ● Pushbuttons

| Type | 1NO (1NC) | 2NO (2NC) (1NO+1NC) | 2NO+2NC |
|---|---|---|---|
| AR22F0R, FAR, F5R, FBR | 27 | 36 | 55 |
| E0R, EAR, F0S, F0Y, G0R<br>E5R, EBR, F5S, F5Y, G5R | 28 | 37 | 56 |
| E0S, E0Y, M4R, G2R<br>E5S, E5Y, M9R, G7R | 29 | 38 | 57 |
| M0R, M5R | 31 | 40 | 59 |
| S1R, S2R, S3R, S6R | – | 43 | 62 |
| M3R, M8R | 44 | 53 | 72 |
| V5R | 49 | 58 | 77 |

### ● Emergency stop pushbuttons

| Type | 1NC | 2NC (1NO+1NC) | 2NO+2NC |
|---|---|---|---|
| AR22VSR | 34 | 43 | 62 |
| V0R, V4R | 36 | 45 | 64 |
| Q2R | 36 | 45 | – |
| V2R | 38 | 47 | 66 |
| V7R | 61 | 70 | 89 |
| VGE | 61 | 65 | – |

### ● Emergency stop illuminated pushbuttons

| Type | Without transformer | | With transformer * | |
|---|---|---|---|---|
| | 1NC | 2NC (1NO+1NC) | 1NC | 2NC (1NO+1NC) |
| AR22VSL, VDL | 48 | 57 | 94 | 103 |
| V0L | 49 | 58 | 95 | 104 |
| VAL | 50 | 59 | 96 | 105 |
| V2L | 51 | 60 | 97 | 106 |
| VGF | 66 | 70 | – | – |

Note: * 230V and over : +17grams

## ■ Mass, gram

### ● Pilot lights

| Type | Without transformer | | With transformer | | With resistor unit |
|---|---|---|---|---|---|
| | Standard | Short-body | Standard * | Short-body | |
| DR22D0L, K0L | 18 | 23 | 70 | 68 | 32 |
| E3L, E3P, F3M, F4M | 19 | 24 | 71 | 69 | 33 |
| F5M | 20 | 25 | 72 | 70 | 34 |
| E3M | 21 | 26 | 73 | 71 | 35 |
| E3N | 23 | 28 | 75 | 73 | 37 |

Note: * 230V and over : +17grams

### ● Selector switches

| Type | 1NO (1NC) | 2NO (2NC) (1NO+1NC) | 2NO+2NC |
|---|---|---|---|
| AR22PR | 30 | 39 | 58 |
| PCR | – | 39 | 58 |
| WR | 31 | 40 | 59 |
| WCR | – | 40 | 59 |
| RR, PY, WY | 32 | 41 | 60 |
| RCR, PCY, WCY | – | 41 | 60 |
| RY | 33 | 42 | 61 |
| RCY | – | 42 | 61 |
| JR, JAR | 56 | 65 | 83 |
| JCR | – | 65 | 83 |
| JY | 57 | 66 | 84 |
| JCY | – | 66 | 84 |

### ● Illuminated selector switches

| Type | Without transformer | | | With transformer * | |
|---|---|---|---|---|---|
| | 1NO (1NC) | 2NO (2NC) (1NO+1NC) | 2NO+2NC | 1NO (1NC) | 2NO (2NC) (1NO+1NC) |
| AR22PL | 42 | 51 | 70 | 88 | 97 |
| PP | 43 | 52 | 71 | 89 | 98 |

Note: * 230V and over : +17grams

### ● Joy stick selector switches

• Screw terminal types

| Type | 1NO x2 | (1NO+1NC) x2 | 1NO x4 | (1NO+1NC) x4 |
|---|---|---|---|---|
| AR22A2N, A7N | 89 | 99 | 116 | 136 |
| A0N, A5N | 99 | 109 | 126 | 146 |
| A1N, A6N | 112 | 122 | 139 | 159 |

• Solder/tab terminal types

| Type | (1NO+1NC) x2 | (2NO+2NC) x2 | (1NO+1NC) x4 | (2NO+2NC) x4 |
|---|---|---|---|---|
| AR22A2H, A7H | 72 | 75 | 82 | 88 |
| A0H, A5H | 82 | 85 | 92 | 98 |
| A1H, A6H | 95 | 98 | 105 | 111 |

### ● Buzzers

| Type | Without transformer | With transformer | With resistor unit |
|---|---|---|---|
| DR22B5 | 50 | 105 | 52 |
| B8 | 53 | 108 | 55 |
| B3 | 66 | 121 | – |

### ● Numerical indicators

| Type | Solder | Solder (with connector) | With right angle connector |
|---|---|---|---|
| DR22N1 | 53 | 62 | 55 |
| N2 | 67 | 76 | 69 |

# AR30 and DR30
# Mass

## ■ Mass, gram

### ● Illuminated pushbuttons

| Type | Without transformer | | | With transformer * | |
|---|---|---|---|---|---|
| | 1NO (1NC) | 2NO (2NC) (1NO+1NC) | 2NO+2NC | 1NO (1NC) | 2NO (2NC) (1NO+1NC) |
| AR30E0L | 49 | 58 | 77 | 95 | 104 |
| E5L | 49 | 58 | – | 95 | 104 |
| G4L | 50 | 59 | 78 | 96 | 105 |
| G9L | 50 | 59 | – | 96 | 105 |
| V5L | 56 | 65 | – | 102 | 111 |
| G2L | 66 | 75 | 94 | 112 | 121 |
| G7L | 66 | 75 | – | 112 | 121 |
| G3L | 72 | 81 | 100 | 118 | 127 |
| G8L | 72 | 81 | – | 118 | 127 |
| Q7L | – | 159 | – | – | 205 |

Note: * 230V and over : +17grams

### ● Pushbuttons

| Type | 1NO (1NC) | 2NO (2NC) (1NO+1NC) | 2NO+2NC |
|---|---|---|---|
| AR30F0R, FAR, F5R, FBR | 36 | 45 | 64 |
| E0R, EAR, G0R, E5R, EBR, G5R | 37 | 46 | 65 |
| M4R | 38 | 47 | 66 |
| M0R, M5R | 40 | 49 | 68 |
| V5R | 42 | 51 | 70 |
| S1R, S2R, S3R, S6R | – | 53 | 72 |
| FVR | 54 | 63 | 82 |
| G1R, G6R | 59 | 68 | 87 |
| N0R | 96 | 105 | 124 |
| GPR | 116 | 125 | 144 |
| GSR, B0R | 123 | 132 | 151 |
| M3R, M8R | 126 | 135 | 154 |
| B1R | 241 | 250 | 269 |
| B3R | 279 | 288 | 307 |
| B2R | 291 | 300 | 319 |

### ● Emergency stop pushbuttons

| Type | 1NC | 2NC (1NO+1NC) | 2NO+2NC |
|---|---|---|---|
| AR30V0R | 43 | 52 | 71 |
| Q2R | 45 | 54 | – |
| V2R | 46 | 55 | 74 |
| V1R | 60 | 69 | 88 |

### ● Emergency stop illuminated pushbuttons

| Type | Without transformer | | With transformer * | |
|---|---|---|---|---|
| | 1NC | 2NC (1NO+1NC) | 1NC | 2NC (1NO+1NC) |
| AR30V0L | 57 | 66 | 103 | 112 |
| V2L | 59 | 68 | 105 | 114 |

Note: * 230V and over : +17grams

## ■ Mass, gram

### ● Pilot lights

• Without transformer type, With transformer type, With resistor unit type

| Type | | Without transformer Standard | With transformer Standard *1 | Short-body | With resistor unit |
|---|---|---|---|---|---|
| DR30 | D0L, K0L | 28 | 80 | 78 | 42 |
| | E3L | 29 | 81 | 79 | 43 |
| | F4M *2 | 32 (30) | 84 (82) | – | 46 |
| | F4N *2 | 34 (30) | 86 (82) | – | 48 |
| | M4M *2 | 37 (32) | 88 (84) | – | 50 |
| | D1L | 94 | 164 | – | 111 |

Notes: *1 230V and over : +17grams
*2 ( ): Incandescent lamp

• With resistor type

| Type | | 50V DC | 110V DC 220V DC |
|---|---|---|---|
| DR30 | D0L, K0L (LED) | 103 | 103 |
| | D0L, K0L (incandescent ) | 107 | 179 |

### ● Selector switches

| Type | | 1NO (1NC) | 2NO (2NC) (1NO+1NC) | 2NO+2NC |
|---|---|---|---|---|
| AR30 | PR, WR | 41 | 50 | 69 |
| | PCR, WCR | – | 50 | 69 |
| | JR, JAR | 67 | 76 | 94 |
| | JCR | – | 76 | 94 |

### ● Illuminated selector switches

| Type | | Without transformer | | | With transformer * | |
|---|---|---|---|---|---|---|
| | | 1NO (1NC) | 2NO (2NC) (1NO+1NC) | 2NO+2NC | 1NO (1NC) | 2NO (2NC) (1NO+1NC) |
| AR30 | PL | 52 | 61 | 80 | 98 | 107 |

Note: * 230V and over : +17grams

### ● Joy stick selector switches

• Screw terminal type

| Type | | 1NO x2 | (1NO+1NC) x2 | 1NO x4 | (1NO+1NC) x4 |
|---|---|---|---|---|---|
| AR30 | A2N, A7N | 100 | 110 | 127 | 147 |
| | A0N, A5N | 110 | 120 | 137 | 157 |
| | A1N, A6N | 124 | 134 | 151 | 171 |

• Solder/tab terminal type

| Type | | (1NO+1NC) x2 | (2NO+2NC) x2 | (1NO+1NC) x4 | (2NO+2NC) x4 |
|---|---|---|---|---|---|
| AR30 | A2H, A7H | 83 | 86 | 93 | 99 |
| | A0H, A5H | 93 | 96 | 103 | 109 |
| | A1H, A6H | 107 | 110 | 117 | 123 |

### ● Buzzers

| Type | | Without transformer | With transformer | With resistor unit |
|---|---|---|---|---|
| DR30 | B5, B6 | 47 | 102 | 49 (Except B6) |
| | B8 | 48 | 103 | 50 |
| | B0 | 86 | – | – |

# AH164, AH165 and AH165-2
# General information

## ■ Features

### Design basis

The 16mm dia. series of compact size pushbuttons are 'finger-size', and consequently take up little panel space. AH165-2 series operators are about twice as large as the AH164 and AH165 series operators for easier operation. With many types of operator available, the most suitable switch can be identified by color, shape and legend, and have a smooth, quality "snap-action". In spite of their small size they have a highly reliable mechanism, and are eminently suited for solid state and other electronic circuits. AH164, AH165 and AH165-2 series contact block holders can easily be removed manually. Moreover, the contact block can be easily attached or detached without using any special tools, thus facilitating addition or replacement of contact.

### Selector switches

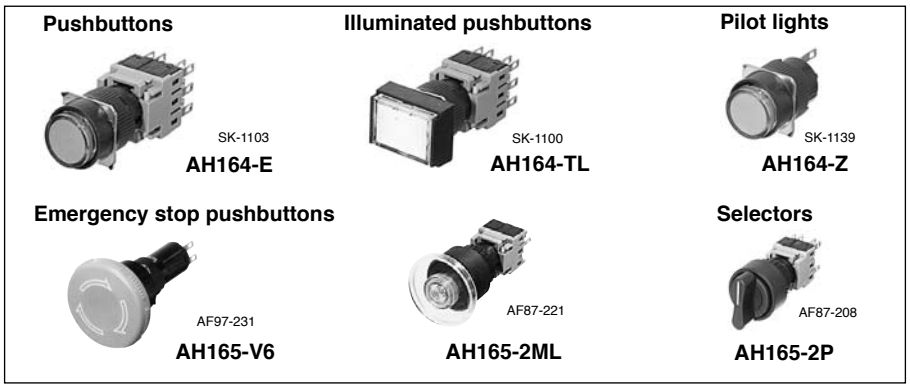
Selector switches can also be supplied in either knob-handle operated or key operated types.

### Strong construction

The operator and contact blocks are molded from an excellent thermal resistance resin and can withstand the heat at the time of soldering.
Since these pushbuttons are manufactured to industrial standards they can withstand vibration or shock thus eliminating lamp failure due to such causes as loose bases.
With regard to the degree of protection, standard types which met the requirements of IP40 of Pub. No. 529, IEC Standards, and oil tight types which meet the requirements of IP65 of the said, are available. This permits the application to various fields, from machine tools to OA (Office Automation) facilities.

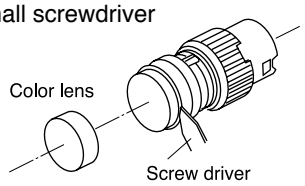
### Quality feel tough

Both the operator and contact block are precisely engineered. There is no fear of the switch malfunction even after long use and it continues to operate smoothly for its service life of about 1,000,000 operations.




### Easy color change

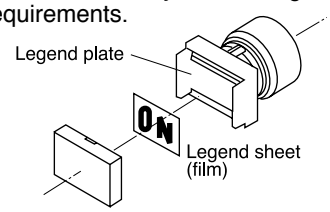
Color lenses fit over the inner button. The lens can easily be removed using a small screwdriver




Note: The luminous color of LEDs and neon illumination types varies with the body color of the product.

### Visible inscription

Button legends are printed on legend sheet, which is stuck to the legend plate on the inner button.
The lettering is back lit by the switch lamp and the inscription is highly visible through the color lens.
Contact FUJI for your lettering requirements.

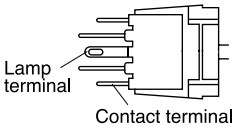



### Excellent switch reliability

The switch uses a snap-action mechanism. The pushbuttons are available with either momentary or alternative actions. The snap-action switch has a double break movement which operates independently of the speed of switching. The contacts are made from gold-flashed silver. High contact reliability of 1mA at 5V AC/DC is assured. Contact blocks are available in 1NO+1NC to 3NO+3NC arrangement.

### Large terminals

Solder/tab terminal is provided as standard. Wire-wrap terminal is available on reguest.



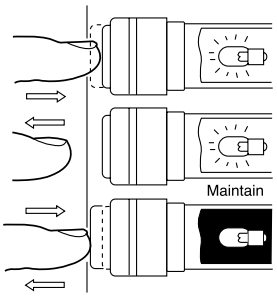

### Safety

FUJI's original Trigger Action mechanism is used in the emergency stop pushbuttons. They are suitable for emergency stop and safety. This mechanism prevents the contacts from moving until the button is pushed and locked.

- Provided with a trigger action mechanism conforming to EN418.
- Provided with direct opening action (approved by TÜV) conforming to EN60947-5-1 and EN60947-5-5.

### Alternate action

In the case of alternate action when the button is depressed the contacts are maintained and remain so even if the finger is removed. The button will not return to its free position. In order to remove the lock, the button must be given a second pressure before the button will return to its free position. This makes it most suitable as the switch for a power source.




### Pushbutton with finger guards

Finger guards are provided for square or rectangular type pushbuttons (SF, TF, SL and TL types) in order to prevent operational error of adjacent buttons.

### Approvals

# AH164, AH165 and AH165-2
# Quick reference guide

## AH164 (standard) / AH165 (oil-tight)

### ■ Illuminated pushbutton switches

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Extended round head | **AH164-L, L5**<br>**AH165-L, L5**<br> <br>SK-1103 | Flush square head | **AH164-SL, SL5**<br>**AH165-SL, SL5**<br> <br>SK-1102 | Flush rectangular head | **AH164-TL, TL5**<br>**AH165-TL, TL5**<br> <br>SK-1100 |
| Flush rectangular head with guard | **AH164-TGL, TGL5**<br>**AH165-TGL, TGL5**<br> <br>SK-1101 | Flush square head with guard | **AH164-SGL, SGL5**<br>**AH165-SGL, SGL5**<br> <br>AF90-301 | | |

Note: Spot LED and red/green LED types: Not approved standard

### ■ Pushbutton switches

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Extended round head | **AH164-E, E5**<br>**AH165-E, E5**<br> <br>SK-1103 | Mushroom head | **AH164-M, M5**<br>**AH165-M, M5**<br> <br>SK-1136 | Flush square head | **AH164-SF, SF5**<br>**AH165-SF, SF5**<br> <br>SK-1102 |
| Flush rectangular head | **AH164-TF, TF5**<br>**AH165-TF, TF5**<br> <br>SK-1100 | Flush rectangular head with guard | **AH164-TGF, TGF5**<br>**AH165-TGF, TGF5**<br> <br>SK-1101 | Flush square head with guard | **AH164-SGF, SGF5**<br>**AH165-SGF, SGF5**<br> <br>AF90-301 |
| Convex square head | **AH164-SM, SM5**<br>**AH165-SM, SM5**<br> <br>SK-1134 | Convex rectangular head | **AH164-TM, TM5**<br>**AH165-TM, TM5**<br> <br>SK-1135 | Push-lock, turn-reset (32mm dia.)<br>⊖ (Direct opening action) | **AH165-VR**<br> <br>AF91-584 |
| Push-lock, turn-reset (40mm dia.)<br>⊖ (Direct opening action) | **AH165-V1R**<br> <br>AF91-583 | | | | |

### ■ Emergency stop pushbutton switches ⊖ (Direct opening action), conform to EN418

| Operator | Type | Operator | Type |
|---|---|---|---|
| Push-lock, turn-reset (32mm dia.) | **AH165-V5R**<br> <br>AF97-232 | Push-lock, turn-reset (40mm dia.) | **AH165-V6R**<br> <br>AF97-231 |

## ■ Selector switches

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Knob with rectangular bezel | **AH164-P**<br>**AH165-P**<br> <br>SK-1099 | Knob with square bezel | **AH164-SP**<br>**AH165-SP**<br> <br>SK-1133 | Key with rectangular bezel | **AH164-J**<br>**AH165-J**<br> <br>SK-1098 |
| Key with square bezel<br>*0* | **AH164-SJ**<br>**AH165-SJ**<br> <br>SK-1132 | Key with rectangular bezel<br>⊖ (Direct opening action) | **AH165-JM**<br> <br>AF95-57 | Key<br>⊖ (Direct opening action) | **AH165-RJM**<br> <br>AF99-320 |

## ■ Pilot lights

| Lens | Type | Lens | Type | Lens | Type |
|---|---|---|---|---|---|
| Extended round | **AH164-Z**<br>**AH165-Z**<br> <br>SK-1139 | Flush square | **AH164-ZS**<br>**AH165-ZS**<br> <br>SK-1138 | Flush rectangular | **AH164-ZT**<br>**AH165-ZT**<br> <br>SK-1137 |
| Dome | **AH165-ZM**<br> <br>AF87-45 | | | | |

## ■ Buzzers

| Sound | Type | Sound | Type | Sound | Type |
|---|---|---|---|---|---|
| Standard | **AH164-TX**<br> <br>AF87-317 | Loud sound | **AH164-TX1**<br> <br>AF87-44 | Loud sound with volume control | **AH164-TX2B**<br> <br>AF93-297 |
| Standard sound with volume control (IP54) | **AH165-X**<br> <br>AF96-243 | | | | |

# AH164, AH165 and AH165-2
# Quick reference guide

Discontinued

### ■ Numerical indicators

| Display | Type | Display | Type | Display | Type |
|---|---|---|---|---|---|
| Without decimal decoder | **AH164-TS**<br>**AH165-TS**<br> <br>SP-165 | With decimal decoder (5, 12, 15V) | **AH164-TC**<br>**AH165-TC**<br> <br>AF87-315 | With decimal decoder (24V) | **AH164-TC4□E**<br>**AH165-TC4□E**<br> <br>AF89-948 |
| With sign decorder (±1 display) | **AH164-TC4□E-1**<br>**AH165-TC4□E-1**<br> <br>AF88-1093 | | | | |

## AH165-2 (oil-tight)

### ■ Illuminated pushbutton switches

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Flush round head | **AH165-2FL, 2FL5**<br> <br>AF87-211 | Extended round head | **AH165-2EL, 2EL5**<br> <br>AF87-210 | Mushroom head | **AH165-2ML**<br> <br>AF87-221 |
| Mushroom head with square bezel | **AH165-2YML**<br> <br>AF87-220 | Flush square head | **AH165-2SFL, 2SFL5**<br> <br>AF87-201 | Extended square head | **AH165-2SEL, 2SEL5**<br> <br>AF87-200 |
| Concave square head | **AH165-2SCL, 2SCL5**<br> <br>AF87-199 | Push-lock, turn-reset | **AH165-2VL**<br> <br>AF87-219 | Push-lock, turn-reset with square bezel | **AH165-2YVL**<br> <br>AF87-218 |

## ■ Pushbutton switches

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Flush round head | **AH165-2F, 2F5** AF87-211 | Extended round head | **AH165-2E, 2E5** AF87-210 | Mushroom head | **AH165-2M** AF87-215 |
| Mushroom head with square bezel | **AH165-2YM** AF87-214 | Flush square head | **AH165-2SF, 2SF5** AF87-201 | Concave square head | **AH165-2SCE, 2SCE5** AF87-199 |
| Extended square head | **AH165-2SE, 2SE5** AF87-200 | With selector ring | **AH165-2S2** AF87-207 | With selector ring with square bezell | **AH165-2YS2** AF87-206 |
| Push-lock, turn-reset | **AH165-2V** AF87-217 | Push-lock, turn-reset with square bezel | **AH165-2YV** AF87-216 | | |

## ■ Selector switches

| Operator | Type | Operator | Type | Operator | Type |
|---|---|---|---|---|---|
| Knob | **AH165-2P** AF87-208 | Knob with square bezel | **AH165-2YP** AF87-202 | Key | **AH165-2J** AF87-223 |
| Key with square bezel | **AH165-2YJ** AF87-222 | Lever | **AH165-2H** AF87-209 | Lever with square bezel | **AH165-2SH** AF87-203 |

## ■ Illuminated selector switches

| Operator | Type |
|---|---|
| Knob | **AH165-2PL** AF87-607 |

# AH164, AH165 and AH165-2
# Quick reference guide

## ■ Pilot lights

| Lens | Type | Lens | Type | Lens | Type |
|---|---|---|---|---|---|
| Flush round | **AH165-2Z** AF87-213 | Extended round | **AH165-2ZE** AF87-212 | Flush square | **AH165-2SZ** AF87-205 |
| Extended square | **AH165-2SZE** AF87-204 | | | | |

## ■ Part number system

### Pushbuttons, illuminated pushbuttons and pilot lights

**AH165 - L R 11 E 3 – W**
① ② ③ ④ ⑤ ⑥ ⑦

① **Product category**
AH164: Standard (IP40)
AH165: Oil-tight (IP65)

② **Operator or lens**
• Operator for illuminated pushbutton
SL: Flush square head
SL5: Flush square head (Alternate)
TL: Flush rectangular head
TL5: Flush rectangular head (Alternate)
L: Extended round head
L5: Extended round head (Alternate)
TGL: Flush rectangular head with guard
TGL5: Flush rectangular head with guard (Alternate)
SGL: Flush square head with guard
SGL5: Flush square head with guard (Alternate)

• Operator for pushbuttons
SF: Flush square head
SF5: Flush square head (Alternate)
TF: Flush rectangular head
TF5: Flush rectangular head (Alternate)
E: Extended round head
E5: Extended round head (Alternate)
TGF: Flush rectangular head with guard
TGF5: Flush rectangular head with guard (Alternate)
SGF: Flush square head with guard
SGF5: Flush square head with guard (Alternate)
M: Mushroom head
M5: Mushroom head (Alternate)
SM: Convex square head
SM5: Convex square head (Alternate)
TM: Convex rectangular head
TM5: Convex rectangular head (Alternate)
V: Push-lock, turn-reset (32mm dia.)*1 *2
V1: Push-lock, turn-reset (40mm dia.)*1 *2

• Operator for emergency stop pushbuttons
V5: Push-lock, turn-reset (32mm dia.)*2
V6: Push-lock, turn-reset (40mm dia.)*2

• Lens for pilot lights
Z: Extended round
ZS: Flush square
ZT: Flush rectangular
ZM: Dome

Note: *1 Product with no trigger action mechanism
*2 AH165 type only, direct opening action

③ **Color of button or lens**

| Code | color | Button | LED | Incandescent | Neon |
|---|---|---|---|---|---|
| G | Green | ○ | ○ | ○ | ○ |
| R | Red | ○ | ○ | ○ | ○ (Orange) |
| B | Black* | ○ | – | – | – |
| Y | Yellow | ○ | ○ | ○ | ○ (Orange) |
| W | White | ○ | ○ (Orange) | ○ | ○ (Orange) |
| S | Blue | ○ | ○ | ○ | ○ (Green) |
| O | Orange | ○ | ○ (Amber) | ○ | ○ |
| RG | Red/Green | – | ○ | – | – |

Notes: • ( ): indicates luminous color
• AH165-V, V1, V5, V6: Red only
* Not available for illuminated types

④ **Contact arrangement**
01: 1NC*1
02: 2NC*1
11: 1NO+1NC
22: 2NO+2NC
33: 3NO+3NC*2

Notes: *1 Available for AH165-V, V1, V5, V6
*2 Not available for with transformer types

⑤ **Lamp voltage**

| Code | LED | Incandescent*2 | Neon*2 |
|---|---|---|---|
| AA | 5V DC*2 | – | – |
| A | 6V DC*2 | 5V AC/DC | – |
| B | 12V DC | 12V AC/DC | – |
| E | 24V DC | 24V AC/DC | – |
| H | 100-110V AC*1 *2 | 100-110V AC*1 | 110V AC |
| K | – | – | 120V AC |
| M | 200-220V AC*1 *2 | 200-220V AC*1 | 220V AC |
| P | – | – | 240V AC |

Notes: *1 With transformer (LED: 24V, Incandescent: 28V)
*2 Not available AH165-ZM
• ZM type: LED lamp only (12, 24V DC)

⑥ **Type of lamp**
Blank: Incandescent
1: Neon
2: Spot LED, LED (ZM types)
3: Flat LED

⑦ **Terminal**
Blank: Solder/tab
W: Wire-wrap
S: Soder (AH165-V, V1, V5, V6 types only)
Note: ZM types: wire-wrap terminal only (Code is blank)

# AH164 and AH165
# Part number system

## ■ Part number system

### Selector switches

**AH165 - J 2 B 11 A – W**
① ② ③ ④ ⑤ ⑥ ⑦

① **Product category**
AH164: Standard (IP40)
AH165: Oil-tight (IP65)

② **Operator**
• 2-position, 3-position (operating angle 90˚)
SP: Knob with square bezel
P: Knob with rectangular bezel
SJ: Key with square bezel
J: Key with rectangular bezel
JM: Key with rectangular bezel (Direct opening action) *
RJM: Key (Direct opening action) *
Note: * AH165 types (2-position) only

• 3-position (operating angle 45˚)
SPK: Knob with square bezel
PK: Knob with rectangular bezel
SJK: Key with square bezel
JK: Key with rectangular bezel

③ **Operation**
2: 2-position, maintained
0: 2-position, spring return*
3: 3-position, maintained
6: 3-position, spring/manual return (Left to center)
7: 3-position, spring/manual return (Right to center)
1: 3-position, spring return
Note: * Except for JM and RJM types

④ **Color of knob or key removable position**
• Color of knob
B: Black

• Key removable position

| Code | 2-position | | 3-position (operating angle 90˚) | | | | 3-position (operating angle 45˚) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 0 | 1 | 3 | 6 | 7 | 1 | 3 | 6 | 7 |
| A | ⦸ | ⦸ | – | ⊖ | – | ⊖ | – | ⦸ | – | ⦸ |
| B | ⊗ | – | – | ⊖ | – | – | – | ⊗ | – | – |
| C | – | – | – | ⊕ | – | – | – | ⊛ | – | – |
| D | ⊘ | – | – | ⊖ | | – | – | ⊘ | | – |
| E | – | – | ⦶ | | | | ⦶ | | | |
| F | – | – | – | – | – | – | – | ⦶ | | – |
| G | – | – | – | – | – | – | – | ⦸ | – | ⦸ |

⑤ **Contact arrangement**
11: 1NO+1NC
22: 2NO+2NC
33: 3NO+3NC*
Note: * Except for JM and RJM types.

⑥ **Key type No.**
A (standard), B, C, D, E, F

⑦ **Terminal**
Blank: Solder/tab
W: Wire-warp
Note: JM, RJM types: Solder/tab terminal only

### Buzzers

**AH164 - T X B E**
① ② ③ ④

① **Product category**
AH164: Standard (IP00)
AH165: Splash-proof (IP54)

② **Sound**
TX: Standard (AH164)
TX1: Loud sound (AH164)
TX2: Loud sound with volume control (AH164)
X: Standard sound with volume control (AH165)

③ **Color of head**
B: Black

④ **Operating voltage**
AAC: 6V AC*2
ADC: 6V DC*2
A: 6V AC/DC*1
E: 12 to 24V AC/DC
F: 35 to 48V AC/DC
Notes: *1 Except for TX and TX1 types
*2 Except for TX2 and X types

# AH164 and AH165
# Ratings and specifications

## ■ Standards approved

| | |
|---|---|
| UL508 | File No. E44592 |
| CSA C22.2 No.14 | File No. LR20479 (except for AH165-ZM)<br>File No. LR84365 (for AH165-ZM) |
| TÜV: EN60947-5-1 | Pushbutton (except for AH165-V, V1), Illuminated pushbutton: R9250087<br>Pushbutton (for AH165-V, V1): J9551059<br>Selector (except for AH165-JM, RJM): R9250088<br>Selector (for AH165-JM, RJM): J9551059<br>Pilot lights: R9250089<br>Buzzer: J9950092 (for AH164-TX2, AH165-X) |
| TÜV: EN60947-5-1<br>EN60947-5-5 | Emergency stop pushbutton: R9950093 |

## ■ Specifications (Indoor use)

•Pushbutton switches, illuminated pushbutton switches selector switches, pilot lights

| Item | AH164 | AH165 |
|---|---|---|
| Rated insulation voltage | 250V AC/DC | |
| Ambient temperature (no condensation or no icing) | –20 to +70°C *1 | –10 to +70°C *2 |
| Humidity | 45 to 85%RH (at –5 to +40°C), no condensation or no icing | |
| Durability (operations) Mechanical | Pushbutton switch<br>Momentary action: 1 million<br>Alternate action: 250,000<br>Push-lock, turn-reset: 100,000<br>Selector switch: 250,000 *3 | |
| Electrical | 100,000 (220V AC 0.7A) | |
| Dielectric strength | 2000V AC, 1 minute<br>(Between lamp and contact terminals: 1500V AC, 1 minute) | |
| Conditional short-circuit current | 1000A | |
| Short-circuit protective device | Fuse 1A *4 | |
| Pollution degree | 3 | |
| Vibration | Resonance: 10 to 55Hz, double amplitude 0.1mm *5<br>Constant: 16.7Hz, double amplitude 3mm | |
| Shock | Malfunction durability: 100m/s² *6<br>Mechanical durability: 500m/s² | |
| Operating frequency | 1200 operation/hour (on-load factor: 40%) | |
| Insulation resistance | 100MΩ or more (500V DC megger) | |
| Degree of protection | IP40 | IP65 |

Notes: *1 For illuminated pushbutton switch and pilot light: –20 to +55°C
*2 For illuminated pushbutton switch and pilot light: –10 to +55°C
*3 Key insertion/removal durability for selector switch key types: 10,000
*4 AH165-V, V1, JM, RJM, V5, V6 types: Fuse 5A
*5 Emergency stop type: 10 to 500Hz, double amplitude 0.7mm (acceleration 50m/s²), according to the test condition of EN60947-5-5 (1998)
*6 Emergency stop type:150m/s²

•Buzzers

| Item | AH164-TX | AH164-TX1 |
|---|---|---|
| Rated insulation voltage | 60V AC/DC | |
| Operating voltage | 6V AC, 6V DC,12 to 24V AC/DC<br>35 to 48V AC/DC | |
| Sound level | 80dB (0.1m)<br>60dB(1m) | 90dB (0.1m)<br>70dB(1m) |
| Durability | 1000h | |
| Frequency | 2 ±0.5kHz | 2.4 to 3.3kHz |
| Intermittent cycle | Approx. 170 cycle/minute | |
| Current consumption | 7mA(24, 48V DC)<br>15mA(6V DC)<br>20mA (6, 24V AC)<br>30mA (48V AC) | 15mA (24, 48V DC)<br>25mA (6V DC)<br>30mA (24V AC)<br>40mA (48V AC)<br>50mA (6V AC) |
| Dielectric strength | 1000V AC, 1 minute | |
| Insulation resistance | 100MΩ or more (500V DC megger) | |
| Ambient temperature | –20 to +60°C (no condensation or no icing) | |
| Humidity | 45 to 85%RH (at –5 to +40˚C) | |
| Operator protection | IP00 | |

| Item | AH164-TX2 | AH165-X |
|---|---|---|
| Rated insulation voltage | 60V AC/DC | |
| Operating voltage | 6V AC/DC, 12 to 24V AC/DC<br>35 to 48V AC/DC | |
| Sound level | 70dB to 90dB (0.1m)<br>50dB to 70dB (1m) | 60dB to 80dB (0.1m)<br>40dB to 60dB (1m) |
| Durability | 1000h | |
| Frequency | 2 ±0.5kHz | 2.4 to 3.3kHz |
| Intermittent cycle | Approx. 170 cycle/minute | |
| Current consumption | 30mA (6V DC)<br>20mA (24, 48V DC)<br>40mA (6, 24, 48V AC) | |
| Dielectric strength | 1000V AC, 1 minute | |
| Insulation resistance | 100MΩ or more (500V DC megger) | |
| Ambient temperature | –20 to +60°C (no condensation or no icing) | |
| Humidity | 45 to 85%RH (at –5 to +40˚C) | |
| Degree of protection | IP00 | IP54 |

## ■ Contact ratings

•UL/CSA standards

| Rated thermal current | Rated operational voltage | Maximum current | |
|---|---|---|---|
| | | AC (Res. load) | DC (Res. load) |
| 5A | 24V | – | 1.0A |
| | 125V | – | 0.2A |
| | 250V | 5.0A | – |

•EN standards (TÜV approved)

| Rated thermal current | Rated operational voltage | Rated operational current | | | | |
|---|---|---|---|---|---|---|
| | | AC 15 (Ind. load) | AC 13 (Ind. load) | AC 12 (Res. load) | DC 13 (Ind. load) | DC 12 (Res. load) |
| 5A | 24V | – | – | – | 0.7A | 1.0A |
| | 100 to 120V | 0.3A | 1.0A | 1.5A | – | – |
| | 100 to 125V | – | – | – | 0.15A | 0.2A |
| | 200 to 240V | 0.3A | 0.7A | 1.0A | – | – |

## ■ Lamp ratings

| Rated operational voltage | Consumption | | |
|---|---|---|---|
| | LED DC | Incandescent AC/DC | Neon AC |
| 5V | 14mA (Yellow: 28mA) | 0.45W (6V) | – |
| 6V | 14mA (Yellow: 28mA) | – | – |
| 12V | 14mA | 0.55W (14V) | – |
| 24V | 14mA | 0.55W (28V) | – |
| 110V | – | – | 0.19VA |
| 120V | – | – | 0.21VA |
| 220V | – | – | 0.38VA |
| 240V | – | – | 0.42VA |

Notes: • With transformer (LED): 1.5VA/110, 220V
• With transformer (Incandescent): 2VA/110, 220V
• For the incandescent lamps, the values in parentheses indicate the rated voltage of the lamps.

## ■ Contact reliability

FUJI has confirmed that the unit can be used in 1mA circuit conditions at 5V AC or DC. The operable range may vary depending on the ambient conditions and type of load.

### ■ Illuminated pushbutton switches/without transformer

| Operator | Lamp | Voltage | Contact | Momentary action | | Alternate action | |
|---|---|---|---|---|---|---|---|
| | | | | AH164 type | AH165 (Oil-tight) type | AH164 type | AH165 (Oil-tight) type |
| Extended round head | Flat LED | 24V DC | 1NO+1NC | **AH164-L□11E3** | **AH165-L□11E3** | **AH164-L5□11E3** | **AH165-L5□11E3** |
| | | | 2NO+2NC | **AH164-L□22E3** | **AH165-L□22E3** | **AH164-L5□22E3** | **AH165-L5□22E3** |
| | | | 3NO+3NC | **AH164-L□33E3** | **AH165-L□33E3** | **AH164-L5□33E3** | **AH165-L5□33E3** |
| | Spot LED | 24V DC | 1NO+1NC | **AH164-L□11E2** | **AH165-L□11E2** | **AH164-L5□11E2** | **AH165-L5□11E2** |
| | | | 2NO+2NC | **AH164-L□22E2** | **AH165-L□22E2** | **AH164-L5□22E2** | **AH165-L5□22E2** |
| | | | 3NO+3NC | **AH164-L□33E2** | **AH165-L□33E2** | **AH164-L5□33E2** | **AH165-L5□33E2** |
| | Incandes-cent | 24V AC/DC | 1NO+1NC | **AH164-L□11E** | **AH165-L□11E** | **AH164-L5□11E** | **AH165-L5□11E** |
| | | | 2NO+2NC | **AH164-L□22E** | **AH165-L□22E** | **AH164-L5□22E** | **AH165-L5□22E** |
| | | | 3NO+3NC | **AH164-L□33E** | **AH165-L□33E** | **AH164-L5□33E** | **AH165-L5□33E** |
| | Neon | 110V AC | 1NO+1NC | **AH164-L□11H1** | **AH165-L□11H1** | **AH164-L5□11H1** | **AH165-L5□11H1** |
| | | | 2NO+2NC | **AH164-L□22H1** | **AH165-L□22H1** | **AH164-L5□22H1** | **AH165-L5□22H1** |
| | | | 3NO+3NC | **AH164-L□33H1** | **AH165-L□33H1** | **AH164-L5□33H1** | **AH165-L5□33H1** |
| | | 220V AC | 1NO+1NC | **AH164-L□11M1** | **AH165-L□11M1** | **AH164-L5□11M1** | **AH165-L5□11M1** |
| | | | 2NO+2NC | **AH164-L□22M1** | **AH165-L□22M1** | **AH164-L5□22M1** | **AH165-L5□22M1** |
| | | | 3NO+3NC | **AH164-L□33M1** | **AH165-L□33M1** | **AH164-L5□33M1** | **AH165-L5□33M1** |
| Flush square head | Flat LED | 24V DC | 1NO+1NC | **AH164-SL□11E3** | **AH165-SL□11E3** | **AH164-SL5□11E3** | **AH165-SL5□11E3** |
| | | | 2NO+2NC | **AH164-SL□22E3** | **AH165-SL□22E3** | **AH164-SL5□22E3** | **AH165-SL5□22E3** |
| | | | 3NO+3NC | **AH164-SL□33E3** | **AH165-SL□33E3** | **AH164-SL5□33E3** | **AH165-SL5□33E3** |
| | Spot LED | 24V DC | 1NO+1NC | **AH164-SL□11E2** | **AH165-SL□11E2** | **AH164-SL5□11E2** | **AH165-SL5□11E2** |
| | | | 2NO+2NC | **AH164-SL□22E2** | **AH165-SL□22E2** | **AH164-SL5□22E2** | **AH165-SL5□22E2** |
| | | | 3NO+3NC | **AH164-SL□33E2** | **AH165-SL□33E2** | **AH164-SL5□33E2** | **AH165-SL5□33E2** |
| | Incandes-cent | 24V AC/DC | 1NO+1NC | **AH164-SL□11E** | **AH165-SL□11E** | **AH164-SL5□11E** | **AH165-SL5□11E** |
| | | | 2NO+2NC | **AH164-SL□22E** | **AH165-SL□22E** | **AH164-SL5□22E** | **AH165-SL5□22E** |
| | | | 3NO+3NC | **AH164-SL□33E** | **AH165-SL□33E** | **AH164-SL5□33E** | **AH165-SL5□33E** |
| | Neon | 110V AC | 1NO+1NC | **AH164-SL□11H1** | **AH165-SL□11H1** | **AH164-SL5□11H1** | **AH165-SL5□11H1** |
| | | | 2NO+2NC | **AH164-SL□22H1** | **AH165-SL□22H1** | **AH164-SL5□22H1** | **AH165-SL5□22H1** |
| | | | 3NO+3NC | **AH164-SL□33H1** | **AH165-SL□33H1** | **AH164-SL5□33H1** | **AH165-SL5□33H1** |
| | | 220V AC | 1NO+1NC | **AH164-SL□11M1** | **AH165-SL□11M1** | **AH164-SL5□11M1** | **AH165-SL5□11M1** |
| | | | 2NO+2NC | **AH164-SL□22M1** | **AH165-SL□22M1** | **AH164-SL5□22M1** | **AH165-SL5□22M1** |
| | | | 3NO+3NC | **AH164-SL□33M1** | **AH165-SL□33M1** | **AH164-SL5□33M1** | **AH165-SL5□33M1** |
| Flush rectangular head | Flat LED | 24V DC | 1NO+1NC | **AH164-TL□11E3** | **AH165-TL□11E3** | **AH164-TL5□11E3** | **AH165-TL5□11E3** |
| | | | 2NO+2NC | **AH164-TL□22E3** | **AH165-TL□22E3** | **AH164-TL5□22E3** | **AH165-TL5□22E3** |
| | | | 3NO+3NC | **AH164-TL□33E3** | **AH165-TL□33E3** | **AH164-TL5□33E3** | **AH165-TL5□33E3** |
| | Spot LED | 24V DC | 1NO+1NC | **AH164-TL□11E2** | **AH165-TL□11E2** | **AH164-TL5□11E2** | **AH165-TL5□11E2** |
| | | | 2NO+2NC | **AH164-TL□22E2** | **AH165-TL□22E2** | **AH164-TL5□22E2** | **AH165-TL5□22E2** |
| | | | 3NO+3NC | **AH164-TL□33E2** | **AH165-TL□33E2** | **AH164-TL5□33E2** | **AH165-TL5□33E2** |
| | Incandes-cent | 24V AC/DC | 1NO+1NC | **AH164-TL□11E** | **AH165-TL□11E** | **AH164-TL5□11E** | **AH165-TL5□11E** |
| | | | 2NO+2NC | **AH164-TL□22E** | **AH165-TL□22E** | **AH164-TL5□22E** | **AH165-TL5□22E** |
| | | | 3NO+3NC | **AH164-TL□33E** | **AH165-TL□33E** | **AH164-TL5□33E** | **AH165-TL5□33E** |
| | Neon | 110V AC | 1NO+1NC | **AH164-TL□11H1** | **AH165-TL□11H1** | **AH164-TL5□11H1** | **AH165-TL5□11H1** |
| | | | 2NO+2NC | **AH164-TL□22H1** | **AH165-TL□22H1** | **AH164-TL5□22H1** | **AH165-TL5□22H1** |
| | | | 3NO+3NC | **AH164-TL□33H1** | **AH165-TL□33H1** | **AH164-TL5□33H1** | **AH165-TL5□33H1** |
| | | 220V AC | 1NO+1NC | **AH164-TL□11M1** | **AH165-TL□11M1** | **AH164-TL5□11M1** | **AH165-TL5□11M1** |
| | | | 2NO+2NC | **AH164-TL□22M1** | **AH165-TL□22M1** | **AH164-TL5□22M1** | **AH165-TL5□22M1** |
| | | | 3NO+3NC | **AH164-TL□33M1** | **AH165-TL□33M1** | **AH164-TL5□33M1** | **AH165-TL5□33M1** |

SK-1103

SK-1102

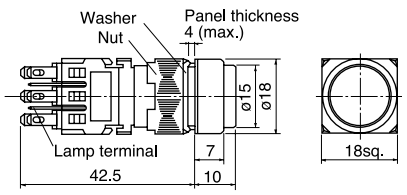
SK-1100

Note: Replace the □ mark by the button color code, *see page 137.*

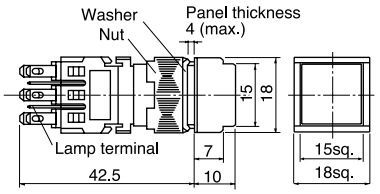
| Operator | Lamp | Voltage | Contact | Momentary action | | Alternate action | |
|---|---|---|---|---|---|---|---|
| | | | | AH164 type | AH165 (oil-tight) type | AH164 type | AH165 (oil-tight) type |
| Flush rectangular head with guard | Flat LED | 24V DC | 1NO+1NC<br>2NO+2NC<br>3NO+3NC | **AH164-TGL□11E3**<br>**AH164-TGL□22E3**<br>**AH164-TGL□33E3** | **AH165-TGL□11E3**<br>**AH165-TGL□22E3**<br>**AH165-TGL□33E3** | **AH164-TGL5□11E3**<br>**AH164-TGL5□22E3**<br>**AH164-TGL5□33E3** | **AH165-TGL5□11E3**<br>**AH165-TGL5□22E3**<br>**AH165-TGL5□33E3** |
| | Incandes-cent | 24V AC/DC | 1NO+1NC<br>2NO+2NC<br>3NO+3NC | **AH164-TGL□11E**<br>**AH164-TGL□22E**<br>**AH164-TGL□33E** | **AH165-TGL□11E**<br>**AH165-TGL□22E**<br>**AH165-TGL□33E** | **AH164-TGL5□11E**<br>**AH164-TGL5□22E**<br>**AH164-TGL5□33E** | **AH165-TGL5□11E**<br>**AH165-TGL5□22E**<br>**AH165-TGL5□33E** |
| <br>SK-1101 | Neon | 110V AC | 1NO+1NC<br>2NO+2NC<br>3NO+3NC | **AH164-TGL□11H1**<br>**AH164-TGL□22H1**<br>**AH164-TGL□33H1** | **AH165-TGL□11H1**<br>**AH165-TGL□22H1**<br>**AH165-TGL□33H1** | **AH164-TGL5□11H1**<br>**AH164-TGL5□22H1**<br>**AH164-TGL5□33H1** | **AH165-TGL5□11H1**<br>**AH165-TGL5□22H1**<br>**AH165-TGL5□33H1** |
| | | 220V AC | 1NO+1NC<br>2NO+2NC<br>3NO+3NC | **AH164-TGL□11M1**<br>**AH164-TGL□22M1**<br>**AH164-TGL□33M1** | **AH165-TGL□11M1**<br>**AH165-TGL□22M1**<br>**AH165-TGL□33M1** | **AH164-TGL5□11M1**<br>**AH164-TGL5□22M1**<br>**AH164-TGL5□33M1** | **AH165-TGL5□11M1**<br>**AH165-TGL5□22M1**<br>**AH165-TGL5□33M1** |
| Flush square head with guard | Flat LED | 24V DC | 1NO+1NC<br>2NO+2NC<br>3NO+3NC | **AH164-SGL□11E3**<br>**AH164-SGL□22E3**<br>**AH164-SGL□33E3** | **AH165-SGL□11E3**<br>**AH165-SGL□22E3**<br>**AH165-SGL□33E3** | **AH164-SGL5□11E3**<br>**AH164-SGL5□22E3**<br>**AH164-SGL5□33E3** | **AH165-SGL5□11E3**<br>**AH165-SGL5□22E3**<br>**AH165-SGL5□33E3** |
| | Incandes-cent | 24V AC/DC | 1NO+1NC<br>2NO+2NC<br>3NO+3NC | **AH164-SGL□11E**<br>**AH164-SGL□22E**<br>**AH164-SGL□33E** | **AH165-SGL□11E**<br>**AH165-SGL□22E**<br>**AH165-SGL□33E** | **AH164-SGL5□11E**<br>**AH164-SGL5□22E**<br>**AH164-SGL5□33E** | **AH165-SGL5□11E**<br>**AH165-SGL5□22E**<br>**AH165-SGL5□33E** |
| <br>AF90-301 | Neon | 110V AC | 1NO+1NC<br>2NO+2NC<br>3NO+3NC | **AH164-SGL□11H1**<br>**AH164-SGL□22H1**<br>**AH164-SGL□33H1** | **AH165-SGL□11H1**<br>**AH165-SGL□22H1**<br>**AH165-SGL□33H1** | **AH164-SGL5□11H1**<br>**AH164-SGL5□22H1**<br>**AH164-SGL5□33H1** | **AH165-SGL5□11H1**<br>**AH165-SGL5□22H1**<br>**AH165-SGL5□33H1** |
| | | 220V AC | 1NO+1NC<br>2NO+2NC<br>3NO+3NC | **AH164-SGL□11M1**<br>**AH164-SGL□22M1**<br>**AH164-SGL□33M1** | **AH165-SGL□11M1**<br>**AH165-SGL□22M1**<br>**AH165-SGL□33M1** | **AH164-SGL5□11M1**<br>**AH164-SGL5□22M1**<br>**AH164-SGL5□33M1** | **AH165-SGL5□11M1**<br>**AH165-SGL5□22M1**<br>**AH165-SGL5□33M1** |

## ■ Dimensions, mm

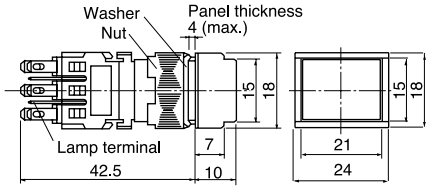
L, L5



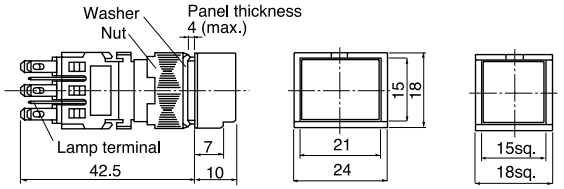

SL, SL5




TL, TL5




TGL, TGL5 SGL, SGL5




**•Button color**

| Color | Green | Red | White | Yellow | Blue | Orange |
|---|---|---|---|---|---|---|
| Code | G | R | W | Y | S | O |

- The color lens is made of a tinted transparent material.
- A white illuminated pushbutton is fitted with a transparent color lens. (Except the neon lamp)
- With wire-wrap pin terminals have a depth of 47mm.

**• Lamp voltage**

Voltages other than above are available

| Code | LED | Incandescent | Neon |
|---|---|---|---|
| AA | 5V DC | – | – |
| A | 6V DC | 5V AC/DC | – |
| B | 12V DC | 12V AC/DC | – |
| K | – | – | 120V AC |
| P | – | – | 240V AC |

### ■ Illuminated pushbutton switches/without transformer (Red/green LED)

| Operator | Lamp | Voltage | Contact | Momentary action | | Alternate action | |
|---|---|---|---|---|---|---|---|
| | | | | AH164 type | AH165 (oil-tight) type | AH164 type | AH165 (oil-tight) type |
| Extended round head SK-1103 | Red/green LED | 24V DC | 1NO+1NC | **AH164-LRG11E3** | **AH165-LRG11E3** | **AH164-L5RG11E3** | **AH165-L5RG11E3** |
| | | | 2NO+2NC | **AH164-LRG22E3** | **AH165-LRG22E3** | **AH164-L5RG22E3** | **AH165-L5RG22E3** |
| | | | 3NO+3NC | **AH164-LRG33E3** | **AH165-LRG33E3** | **AH164-L5RG33E3** | **AH165-L5RG33E3** |
| Flush square head SK-1102 | Red/green LED | 24V DC | 1NO+1NC | **AH164-SLRG11E3** | **AH165-SLRG11E3** | **AH164-SL5RG11E3** | **AH165-SL5RG11E3** |
| | | | 2NO+2NC | **AH164-SLRG22E3** | **AH165-SLRG22E3** | **AH164-SL5RG22E3** | **AH165-SL5RG22E3** |
| | | | 3NO+3NC | **AH164-SLRG33E3** | **AH165-SLRG33E3** | **AH164-SL5RG33E3** | **AH165-SL5RG33E3** |
| Flush rectangular head SK-1100 | Red/green LED | 24V DC | 1NO+1NC | **AH164-TLRG11E3** | **AH165-TLRG11E3** | **AH164-TL5RG11E3** | **AH165-TL5RG11E3** |
| | | | 2NO+2NC | **AH164-TLRG22E3** | **AH165-TLRG22E3** | **AH164-TL5RG22E3** | **AH165-TL5RG22E3** |
| | | | 3NO+3NC | **AH164-TLRG33E3** | **AH165-TLRG33E3** | **AH164-TL5RG33E3** | **AH165-TL5RG33E3** |
| Flush square head with guard AF90-301 | Red/green LED | 24V DC | 1NO+1NC | **AH164-SGLRG11E3** | **AH165-SGLRG11E3** | **AH164-SGL5RG11E3** | **AH165-SGL5RG11E3** |
| | | | 2NO+2NC | **AH164-SGLRG22E3** | **AH165-SGLRG22E3** | **AH164-SGL5RG22E3** | **AH165-SGL5RG22E3** |
| | | | 3NO+3NC | **AH164-SGLRG33E3** | **AH165-SGLRG33E3** | **AH164-SGL5RG33E3** | **AH165-SGL5RG33E3** |
| Flush rectangular head with guard SK-1101 | Red/green LED | 24V DC | 1NO+1NC | **AH164-TGLRG11E3** | **AH165-TGLRG11E3** | **AH164-TGL5RG11E3** | **AH165-TGL5RG11E3** |
| | | | 2NO+2NC | **AH164-TGLRG22E3** | **AH165-TGLRG22E3** | **AH164-TGL5RG22E3** | **AH165-TGL5RG22E3** |
| | | | 3NO+3NC | **AH164-TGLRG33E3** | **AH165-TGLRG33E3** | **AH164-TGL5RG33E3** | **AH165-TGL5RG33E3** |

Note: • The only color codes used for red/green LEDs are R and G. The color lens is transparent.
Red/green LEDs do not have high-brightness specifications.
• 24V DC only

Discontinued Mar. 2007

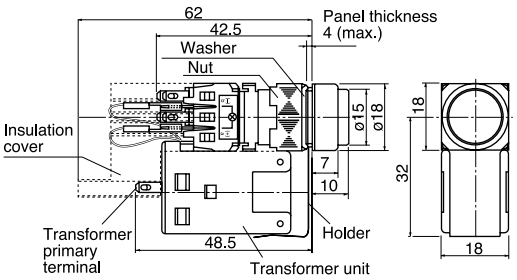
### ■ Illuminated pushbutton switches/with transformer

| Operator | Lamp | Voltage | Contact | Momentary action | | Alternate action | |
|---|---|---|---|---|---|---|---|
| | | | | AH164 type | AH165 (oil-tight) type | AH164 type | AH165 (oil-tight) type |
| Extended round head AF90-945 | Flat LED | ■ Voltage code H: 100-110V AC M: 200-220V AC | 1NO+1NC | **AH164-L□11■3** | **AH165-L□11■3** | **AH164-L5□11■3** | **AH165-L5□11■3** |
| | | | 2NO+2NC | **AH164-L□22■3** | **AH165-L□22■3** | **AH164-L5□22■3** | **AH165-L5□22■3** |
| | Incandescent | | 1NO+1NC | **AH164-L□11■** | **AH165-L□11■** | **AH164-L5□11■** | **AH165-L5□11■** |
| | | | 2NO+2NC | **AH164-L□22■** | **AH165-L□22■** | **AH164-L5□22■** | **AH165-L5□22■** |
| Flush square head AF90-946 | Flat LED | ■ Voltage code H: 100-110V AC M: 200-220V AC | 1NO+1NC | **AH164-SL□11■3** | **AH165-SL□11■3** | **AH164-SL5□11■3** | **AH165-SL5□11■3** |
| | | | 2NO+2NC | **AH164-SL□22■3** | **AH165-SL□22■3** | **AH164-SL5□22■3** | **AH165-SL5□22■3** |
| | Incandescent | | 1NO+1NC | **AH164-SL□11■** | **AH165-SL□11■** | **AH164-SL5□11■** | **AH165-SL5□11■** |
| | | | 2NO+2NC | **AH164-SL□22■** | **AH165-SL□22■** | **AH164-SL5□22■** | **AH165-SL5□22■** |
| Flush rectangular head AF90-947 | Flat LED | ■ Voltage code H: 100-110V AC M: 200-220V AC | 1NO+1NC | **AH164-TL□11■3** | **AH165-TL□11■3** | **AH164-TL5□11■3** | **AH165-TL5□11■3** |
| | | | 2NO+2NC | **AH164-TL□22■3** | **AH165-TL□22■3** | **AH164-TL5□22■3** | **AH165-TL5□22■3** |
| | Incandescent | | 1NO+1NC | **AH164-TL□11■** | **AH165-TL□11■** | **AH164-TL5□11■** | **AH165-TL5□11■** |
| | | | 2NO+2NC | **AH164-TL□22■** | **AH165-TL□22■** | **AH164-TL5□22■** | **AH165-TL5□22■** |
| Flush rectangular head with guard AF90-941 | Flat LED | ■ Voltage code H: 100-110V AC M: 200-220V AC | 1NO+1NC | **AH164-TGL□11■3** | **AH165-TGL□11■3** | **AH164-TGL5□11■3** | **AH165-TGL5□11■3** |
| | | | 2NO+2NC | **AH164-TGL□22■3** | **AH165-TGL□22■3** | **AH164-TGL5□22■3** | **AH165-TGL5□22■3** |
| | Incandescent | | 1NO+1NC | **AH164-TGL□11■** | **AH165-TGL□11■** | **AH164-TGL5□11■** | **AH165-TGL5□11■** |
| | | | 2NO+2NC | **AH164-TGL□22■** | **AH165-TGL□22■** | **AH164-TGL5□22■** | **AH165-TGL5□22■** |
| Flush square head with guard AF90-948 | Flat LED | ■ Voltage code H: 100-110V AC M: 200-220V AC | 1NO+1NC | **AH164-SGL□11■3** | **AH165-SGL□11■3** | **AH164-SGL5□11■3** | **AH165-SGL5□11■3** |
| | | | 2NO+2NC | **AH164-SGL□22■3** | **AH165-SGL□22■3** | **AH164-SGL5□22■3** | **AH165-SGL5□22■3** |
| | Incandescent | | 1NO+1NC | **AH164-SGL□11■** | **AH165-SGL□11■** | **AH164-SGL5□11■** | **AH165-SGL5□11■** |
| | | | 2NO+2NC | **AH164-SGL□22■** | **AH165-SGL□22■** | **AH164-SGL5□22■** | **AH165-SGL5□22■** |

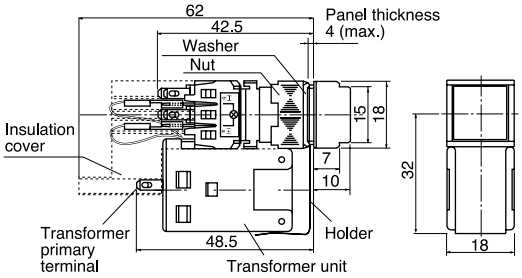
Note: Replace the □ mark by the button color code, *see page 140.*

## ■ Dimensions, mm

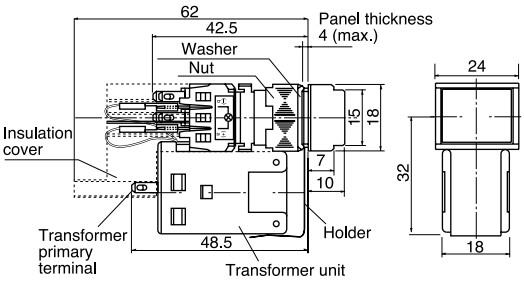
L, L5



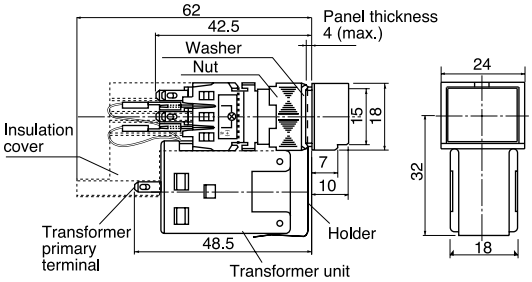

SL, SL5



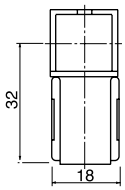

TL, TL5




TGL, TGL5




SGL, SGL5

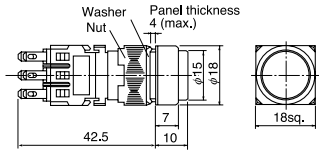
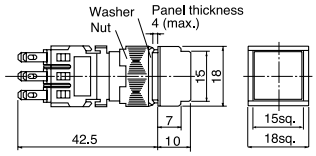
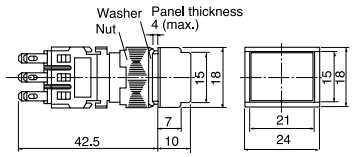
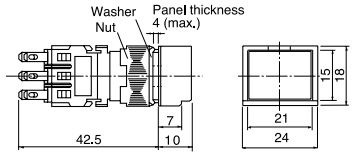
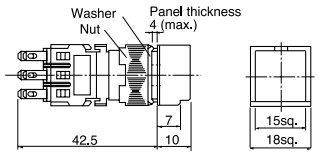
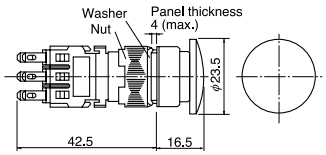
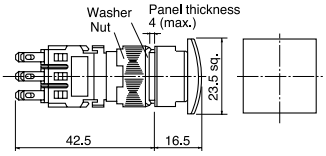
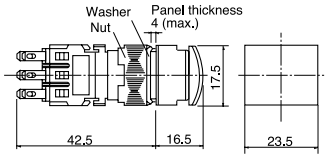



**•Button color**

| Color | Green | Red | White | Yellow | Blue | Orange |
|---|---|---|---|---|---|---|
| Code | G | R | W | Y | S | O |

• The color lens is made of a tinted transparent material.

## ■ Pushbutton switches

| Operator | Contact | Momentary action | | Alternate action | | Dimensions, mm |
|---|---|---|---|---|---|---|
| | | AH164 type | AH165 (oil-tight) type | AH164 type | AH165 (oil-tight) type | |
| Extended round head SK-1103 | 1NO+1NC | **AH164-E□11** | **AH165-E□11** | **AH164-E5□11** | **AH165-E5□11** |   |
| | 2NO+2NC | **AH164-E□22** | **AH165-E□22** | **AH164-E5□22** | **AH165-E5□22** | |
| | 3NO+3NC | **AH164-E□33** | **AH165-E□33** | **AH164-E5□33** | **AH165-E5□33** | |
| Flush square head SK-1102 | 1NO+1NC | **AH164-SF□11** | **AH165-SF□11** | **AH164-SF5□11** | **AH165-SF5□11** |   |
| | 2NO+2NC | **AH164-SF□22** | **AH165-SF□22** | **AH164-SF5□22** | **AH165-SF5□22** | |
| | 3NO+3NC | **AH164-SF□33** | **AH165-SF□33** | **AH164-SF5□33** | **AH165-SF5□33** | |
| Flush rectangular head SK-1100 | 1NO+1NC | **AH164-TF□11** | **AH165-TF□11** | **AH164-TF5□11** | **AH165-TF5□11** |   |
| | 2NO+2NC | **AH164-TF□22** | **AH165-TF□22** | **AH164-TF5□22** | **AH165-TF5□22** | |
| | 3NO+3NC | **AH164-TF□33** | **AH165-TF□33** | **AH164-TF5□33** | **AH165-TF5□33** | |
| Flush rectangular head with guard SK-1101 | 1NO+1NC | **AH164-TGF□11** | **AH165-TGF□11** | **AH164-TGF5□11** | **AH165-TGF5□11** |   |
| | 2NO+2NC | **AH164-TGF□22** | **AH165-TGF□22** | **AH164-TGF5□22** | **AH165-TGF5□22** | |
| | 3NO+3NC | **AH164-TGF□33** | **AH165-TGF□33** | **AH164-TGF5□33** | **AH165-TGF5□33** | |
| Flush square head with guard AF90-301 | 1NO+1NC | **AH164-SGF□11** | **AH165-SGF□11** | **AH164-SGF5□11** | **AH165-SGF5□11** |   |
| | 2NO+2NC | **AH164-SGF□22** | **AH165-SGF□22** | **AH164-SGF5□22** | **AH165-SGF5□22** | |
| | 3NO+3NC | **AH164-SGF□33** | **AH165-SGF□33** | **AH164-SGF5□33** | **AH165-SGF5□33** | |
| Mushroom head SK-1136 | 1NO+1NC | **AH164-M□11** | **AH165-M□11** | **AH164-M5□11** | **AH165-M5□11** |   |
| | 2NO+2NC | **AH164-M□22** | **AH165-M□22** | **AH164-M5□22** | **AH165-M5□22** | |
| | 3NO+3NC | **AH164-M□33** | **AH165-M□33** | **AH164-M5□33** | **AH165-M5□33** | |
| Convex square head SK-1134 | 1NO+1NC | **AH164-SM□11** | **AH165-SM□11** | **AH164-SM5□11** | **AH165-SM5□11** |   |
| | 2NO+2NC | **AH164-SM□22** | **AH165-SM□22** | **AH164-SM5□22** | **AH165-SM5□22** | |
| | 3NO+3NC | **AH164-SM□33** | **AH165-SM□33** | **AH164-SM5□33** | **AH165-SM5□33** | |
| Convex rectangular head SK-1135 | 1NO+1NC | **AH164-TM□11** | **AH165-TM□11** | **AH164-TM5□11** | **AH165-TM5□11** |   |
| | 2NO+2NC | **AH164-TM□22** | **AH165-TM□22** | **AH164-TM5□22** | **AH165-TM5□22** | |
| | 3NO+3NC | **AH164-TM□33** | **AH165-TM□33** | **AH164-TM5□33** | **AH165-TM5□33** | |

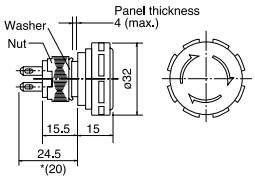
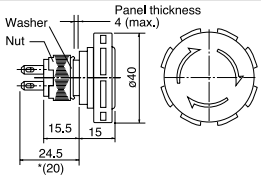
**•Button color**
Replace the □ mark by the following color code

| Color | Green | Red | Black | White | Blue | Yellow | Orange |
|---|---|---|---|---|---|---|---|
| Code | G | R | B | W | S | Y | O |

- The color lens is made of a tinted transparent material. (Except the M, SM, TM types)
- A white pushbutton is fitted with a transparent color lens.(Except the M, SM, TM types) A black pushbutton consists of a transparent color lens and an attached black legend plate. (Except M, SM, TM types)
- With wire-wrap pin terminals have a depth of 47mm.

## ■ Pushbutton switches

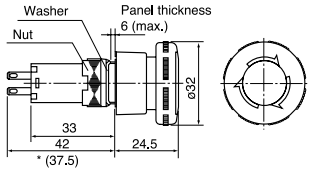
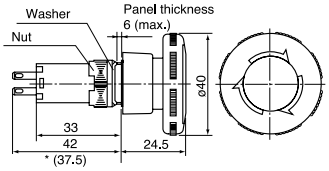
⊖ (Direct opening action)

| Operator | Button color | Contact | Terminal | AH165 (oil-tight) type | Dimensions, mm |
|---|---|---|---|---|---|
| Push-lock, turn-reset (32mm dia.) AF91-584 | Red | 1NC | Solder/Tab Solder | **AH165-VR01 (AH165-VR01-S)** |   |
| | | 2NC | | **AH165-VR02 (AH165-VR02-S)** | |
| Push-lock, turn-reset (40mm dia.) AF91-583 | | 1NC | | **AH165-V1R01 (AH165-V1R01-S)** |   |
| | | 2NC | | **AH165-V1R02 (AH165-V1R02-S)** | |

Notes: * ( ) For switch with solder terminal.
• Contact arrangements indicated in the table can be supplied.
• Product with no trigger action mechanism.

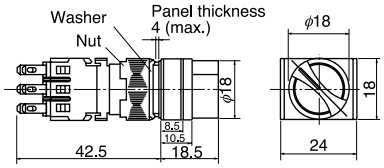
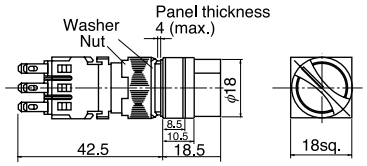
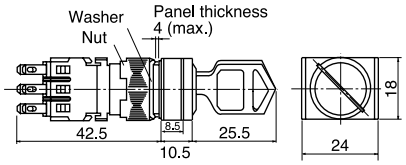
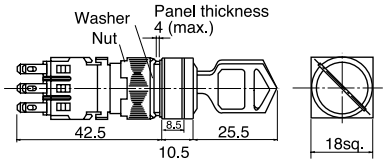
## ■ Emergency stop pushbutton switches

⊖ (Direct opening action), conform to EN418

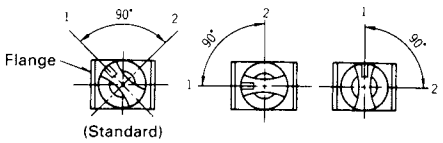
| Operator | Button color | Contact | Terminal | AH165 (oil-tight) type | Dimensions, mm |
|---|---|---|---|---|---|
| Push-lock, turn-reset (32mm dia.) AF97-232 | Red | 1NC | Solder/Tab Solder | **AH165-V5R01 (AH165-V5R01-S)** |   |
| | | 2NC | | **AH165-V5R02 (AH165-V5R02-S)** | |
| Push-lock, turn-reset (40mm dia.) AF97-231 | | 1NC | | **AH165-V6R01 (AH165-V6R01-S)** |   |
| | | 2NC | | **AH165-V6R02 (AH165-V6R02-S)** | |

Notes: * ( ) For switch with solder terminal.
• Contact arrangements indicated in the table can be supplied.

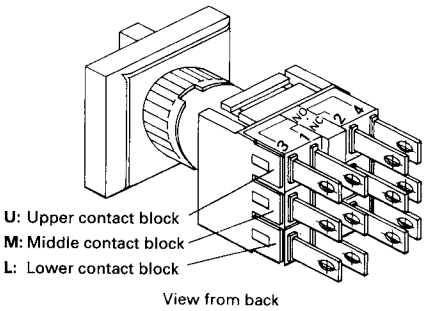
## ■ Selector switches/2-position (90-degree)

| Operator | Operation | Key removable position | Contact | AH164 type | AH165 (oil-tight) type | Dimensions, mm |
|---|---|---|---|---|---|---|
| Knob with rectangular bezel AF89-564 | Maintained | — | 1NO+1NC | **AH164-P2B11** | **AH165-P2B11** |   |
| | | | 2NO+2NC | **AH164-P2B22** | **AH165-P2B22** | |
| | | | 3NO+3NC | **AH164-P2B33** | **AH165-P2B33** | |
| | Spring return | — | 1NO+1NC | **AH164-P0B11** | **AH165-P0B11** | |
| | | | 2NO+2NC | **AH164-P0B22** | **AH165-P0B22** | |
| | | | 3NO+3NC | **AH164-P0B33** | **AH165-P0B33** | |
| Knob with square bezel AF89-563 | Maintained | — | 1NO+1NC | **AH164-SP2B11** | **AH165-SP2B11** |   |
| | | | 2NO+2NC | **AH164-SP2B22** | **AH165-SP2B22** | |
| | | | 3NO+3NC | **AH164-SP2B33** | **AH165-SP2B33** | |
| | Spring return | — | 1NO+1NC | **AH164-SP0B11** | **AH165-SP0B11** | |
| | | | 2NO+2NC | **AH164-SP0B22** | **AH165-SP0B22** | |
| | | | 3NO+3NC | **AH164-SP0B33** | **AH165-SP0B33** | |
| Key with rectangular bezel AF89-561 | Maintained | A | 1NO+1NC | **AH164-J2A11A** | **AH165-J2A11A** |   |
| | | | 2NO+2NC | **AH164-J2A22A** | **AH165-J2A22A** | |
| | | | 3NO+3NC | **AH164-J2A33A** | **AH165-J2A33A** | |
| | | B | 1NO+1NC | **AH164-J2B11A** | **AH165-J2B11A** | |
| | | | 2NO+2NC | **AH164-J2B22A** | **AH165-J2B22A** | |
| | | | 3NO+3NC | **AH164-J2B33A** | **AH165-J2B33A** | |
| | | D | 1NO+1NC | **AH164-J2D11A** | **AH165-J2D11A** | |
| | | | 2NO+2NC | **AH164-J2D22A** | **AH165-J2D22A** | |
| | | | 3NO+3NC | **AH164-J2D33A** | **AH165-J2D33A** | |
| | Spring return | A | 1NO+1NC | **AH164-J0A11A** | **AH165-J0A11A** | |
| | | | 2NO+2NC | **AH164-J0A22A** | **AH165-J0A22A** | |
| | | | 3NO+3NC | **AH164-J0A33A** | **AH165-J0A33A** | |
| Key with square bezel AF89-562 | Maintained | A | 1NO+1NC | **AH164-SJ2A11A** | **AH165-SJ2A11A** |   |
| | | | 2NO+2NC | **AH164-SJ2A22A** | **AH165-SJ2A22A** | |
| | | | 3NO+3NC | **AH164-SJ2A33A** | **AH165-SJ2A33A** | |
| | | B | 1NO+1NC | **AH164-SJ2B11A** | **AH165-SJ2B11A** | |
| | | | 2NO+2NC | **AH164-SJ2B22A** | **AH165-SJ2B22A** | |
| | | | 3NO+3NC | **AH164-SJ2B33A** | **AH165-SJ2B33A** | |
| | | D | 1NO+1NC | **AH164-SJ2D11A** | **AH165-SJ2D11A** | |
| | | | 2NO+2NC | **AH164-SJ2D22A** | **AH165-SJ2D22A** | |
| | | | 3NO+3NC | **AH164-SJ2D33A** | **AH165-SJ2D33A** | |
| | Spring return | A | 1NO+1NC | **AH164-SJ0A11A** | **AH165-SJ0A11A** | |
| | | | 2NO+2NC | **AH164-SJ0A22A** | **AH165-SJ0A22A** | |
| | | | 3NO+3NC | **AH164-SJ0A33A** | **AH165-SJ0A33A** | |

- The operating angle range can be changed as shown below by setting the attached flange shifted by 45° in combination with the contact block.
  In this case, the minimum mounting pitch is 26mm because the contact block is shifted by 45° from the flange.




- **Contact block position**




- **Contact arrangement and operator position:**

2-position selector switch

| Contact arrangement | | 1NO+1NC | 2NO+2NC | 3NO+3NC |
|---|---|---|---|---|
| Operator position | Left | M | U, L | U, M, L |
| | Right | M | U, L | U, M, L |

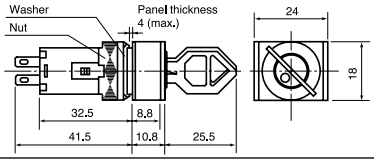
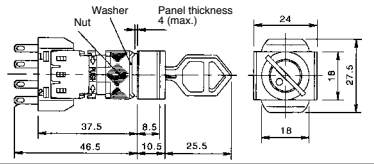
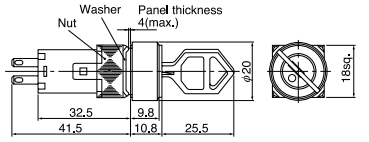
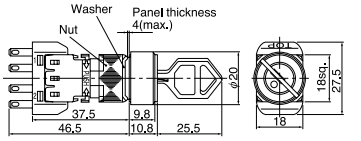
3-position selector switch

| Contact arrangement | | 2NO+2NC | 3NO+3NC |
|---|---|---|---|
| Operator position | Left | U L | U M L |
| | Center | | |
| | Right | | |

- There are 6 available key types; A, B, C, D, E and F.
  Standard key code is A.
- With wire-wrap pin terminals have a depth of 47mm.

## ■ Selector switches/2-position (90-degree)

⊖ (Direct opening action)

| Operator | Operation | Key removable position | Contact | AH165 (oil-tight) type | Dimensions, mm |
|---|---|---|---|---|---|
| Key with rectangular bezel AF95-57 | Maintained | A ⊘ | 1NO+1NC | **AH165-JM2A11A** |   |
| | | B ⊗ | | **AH165-JM2B11A** | |
| | | D ⊘ | | **AH165-JM2D11A** | |
| AF97-334 | | A ⊘ | 2NO+2NC | **AH165-JM2A22A** |   |
| | | B ⊗ | | **AH165-JM2B22A** | |
| | | D ⊘ | | **AH165-JM2D22A** | |
| Key with round bezel | Maintained | A ⊘ | 1NO+1NC | **AH165-RJM2A11A** |   |
| | | B ⊗ | | **AH165-RJM2B11A** | |
| | | D ⊘ | | **AH165-RJM2D11A** | |
| AF99-320 | | A ⊘ | 2NO+2NC | **AH165-RJM2A22A** |   |
| | | B ⊗ | | **AH165-RJM2B22A** | |
| | | D ⊘ | | **AH165-RJM2D22A** | |

- There are 6 available key types; A, B, C, D, E and F. Standard key code is A.

- **Contact arrangement and operator positions:**

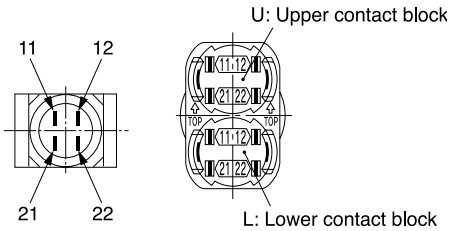
2-position selector switch

| Contact arrangement | | 1NO+1NC | |
|---|---|---|---|
| Operator position | Left ⊘ | 11 12 | 21 22 |
| | Right ⊘ | 11 12 | 21 22 |

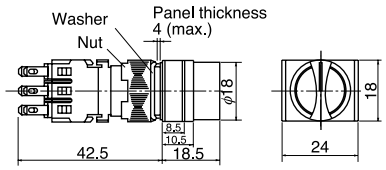
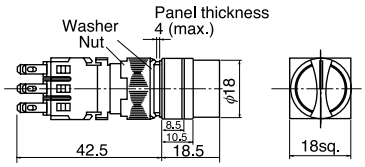
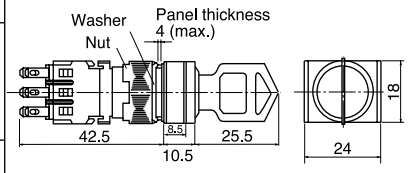
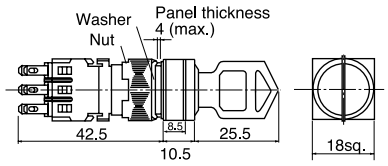
| Contact arrangement | | 2NO+2NC | |
|---|---|---|---|
| Operator position | Left ⊘ | U 11 12 / 21 22 | L 11 12 / 21 22 |
| | Right ⊘ | 11 12 / 21 22 | 11 12 / 21 22 |

- **Terminal number**

1NO+1NC 2NO+2NC

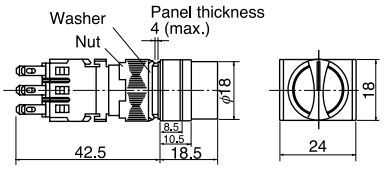
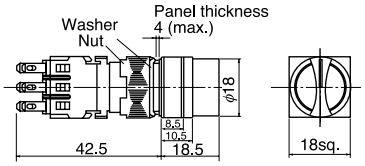
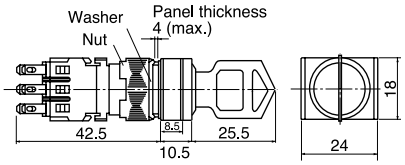
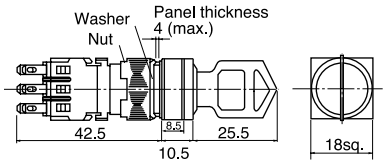


## ■ Selector switches/3-position (90-degree)

| Operator | Operation | Key removable position | Contact | AH164 type | AH165 (oil-tight) type | Dimensions, mm |
|---|---|---|---|---|---|---|
| Knob with rectangular bezel | Maintained | — | 2NO+2NC | **AH164-P3B22** | **AH165-P3B22** |   |
| | | | 3NO+3NC | **AH164-P3B33** | **AH165-P3B33** | |
| | Spring/ manual return | — | 2NO+2NC | **AH164-P6B22** | **AH165-P6B22** | |
| | | | 3NO+3NC | **AH164-P6B33** | **AH165-P6B33** | |
| | Spring/ manual return | — | 2NO+2NC | **AH164-P7B22** | **AH165-P7B22** | |
| | | | 3NO+3NC | **AH164-P7B33** | **AH165-P7B33** | |
| SK-1099 | Spring return | — | 2NO+2NC | **AH164-P1B22** | **AH165-P1B22** | |
| | | | 3NO+3NC | **AH164-P1B33** | **AH165-P1B33** | |
| Knob with square bezel | Maintained | — | 2NO+2NC | **AH164-SP3B22** | **AH165-SP3B22** |   |
| | | | 3NO+3NC | **AH164-SP3B33** | **AH165-SP3B33** | |
| | Spring/ manual return | — | 2NO+2NC | **AH164-SP6B22** | **AH165-SP6B22** | |
| | | | 3NO+3NC | **AH164-SP6B33** | **AH165-SP6B33** | |
| | Spring/ manual return | — | 2NO+2NC | **AH164-SP7B22** | **AH165-SP7B22** | |
| | | | 3NO+3NC | **AH164-SP7B33** | **AH165-SP7B33** | |
| SK-1133 | Spring return | — | 2NO+2NC | **AH164-SP1B22** | **AH165-SP1B22** | |
| | | | 3NO+3NC | **AH164-SP1B33** | **AH165-SP1B33** | |
| Key with rectangular bezel | Maintained* | A | 2NO+2NC | **AH164-J3A22A** | **AH165-J3A22A** |   |
| | | | 3NO+3NC | **AH164-J3A33A** | **AH165-J3A33A** | |
| | | E | 2NO+2NC | **AH164-J3E22A** | **AH165-J3E22A** | |
| | | | 3NO+3NC | **AH164-J3E33A** | **AH165-J3E33A** | |
| | | D | 2NO+2NC | **AH164-J3D22A** | **AH165-J3D22A** | |
| | | | 3NO+3NC | **AH164-J3D33A** | **AH165-J3D33A** | |
| | | C | 2NO+2NC | **AH164-J3C22A** | **AH165-J3C22A** | |
| | | | 3NO+3NC | **AH164-J3C33A** | **AH165-J3C33A** | |
| | Spring/ manual return | E | 2NO+2NC | **AH164-J6E22A** | **AH165-J6E22A** | |
| | | | 3NO+3NC | **AH164-J6E33A** | **AH165-J6E33A** | |
| | | D | 2NO+2NC | **AH164-J6D22A** | **AH165-J6D22A** | |
| | | | 3NO+3NC | **AH164-J6D33A** | **AH165-J6D33A** | |
| | Spring/ manual return | A | 2NO+2NC | **AH164-J7A22A** | **AH165-J7A22A** | |
| | | | 3NO+3NC | **AH164-J7A33A** | **AH165-J7A33A** | |
| | | E | 2NO+2NC | **AH164-J7E22A** | **AH165-J7E22A** | |
| | | | 3NO+3NC | **AH164-J7E33A** | **AH165-J7E33A** | |
| SK-1098 | Spring return | E | 2NO+2NC | **AH164-J1E22A** | **AH165-J1E22A** | |
| | | | 3NO+3NC | **AH164-J1E33A** | **AH165-J1E33A** | |
| Key with square bezel | Maintained* | A | 2NO+2NC | **AH164-SJ3A22A** | **AH165-SJ3A22A** |   |
| | | | 3NO+3NC | **AH164-SJ3A33A** | **AH165-SJ3A33A** | |
| | | E | 2NO+2NC | **AH164-SJ3E22A** | **AH165-SJ3E22A** | |
| | | | 3NO+3NC | **AH164-SJ3E33A** | **AH165-SJ3E33A** | |
| | | D | 2NO+2NC | **AH164-SJ3D22A** | **AH165-SJ3D22A** | |
| | | | 3NO+3NC | **AH164-SJ3D33A** | **AH165-SJ3D33A** | |
| | | C | 2NO+2NC | **AH164-SJ3C22A** | **AH165-SJ3C22A** | |
| | | | 3NO+3NC | **AH164-SJ3C33A** | **AH165-SJ3C33A** | |
| | Spring/ manual return | E | 2NO+2NC | **AH164-SJ6E22A** | **AH165-SJ6E22A** | |
| | | | 3NO+3NC | **AH164-SJ6E33A** | **AH165-SJ6E33A** | |
| | | D | 2NO+2NC | **AH164-SJ6D22A** | **AH165-SJ6D22A** | |
| | | | 3NO+3NC | **AH164-SJ6D33A** | **AH165-SJ6D33A** | |
| | Spring/ manual return | A | 2NO+2NC | **AH164-SJ7A22A** | **AH165-SJ7A22A** | |
| | | | 3NO+3NC | **AH164-SJ7A33A** | **AH165-SJ7A33A** | |
| | | E | 2NO+2NC | **AH164-SJ7E22A** | **AH165-SJ7E22A** | |
| | | | 3NO+3NC | **AH164-SJ7E33A** | **AH165-SJ7E33A** | |
| SK-1132 | Spring return | E | 2NO+2NC | **AH164-SJ1E22A** | **AH165-SJ1E22A** | |
| | | | 3NO+3NC | **AH164-SJ1E33A** | **AH165-SJ1E33A** | |

- There are 6 available key types; A, B, C, D, E and F. Standard key code is A.
- Contact arrangement and operator position: *See page 147.*
- Spring return, spring/manual return (spring return): Operation angle 70-degree
- * Available key removable position: Code B
- With wire-wrap pin terminals have a depth of 47mm.

### ■ Selector switches/3-position (45-degree)

| Operator | Operation | Key removable position | Contact | AH164 type | AH165 (oil-tight) type | Dimensions, mm |
|---|---|---|---|---|---|---|
| Knob with rectangular bezel | Maintained | — | 2NO+2NC | **AH164-PK3B22** | **AH165-PK3B22** |   |
| | | | 3NO+3NC | **AH164-PK3B33** | **AH165-PK3B33** | |
| | Spring/ manual return | — | 2NO+2NC | **AH164-PK6B22** | **AH165-PK6B22** | |
| | | | 3NO+3NC | **AH164-PK6B33** | **AH165-PK6B33** | |
| | Spring/ manual return | — | 2NO+2NC | **AH164-PK7B22** | **AH165-PK7B22** | |
| | | | 3NO+3NC | **AH164-PK7B33** | **AH165-PK7B33** | |
| SK-1099 | Spring return | — | 2NO+2NC | **AH164-PK1B22** | **AH165-PK1B22** | |
| | | | 3NO+3NC | **AH164-PK1B33** | **AH165-PK1B33** | |
| Knob with square bezel | Maintained | — | 2NO+2NC | **AH164-SPK3B22** | **AH165-SPK3B22** |   |
| | | | 3NO+3NC | **AH164-SPK3B33** | **AH165-SPK3B33** | |
| | Spring/ manual return | — | 2NO+2NC | **AH164-SPK6B22** | **AH165-SPK6B22** | |
| | | | 3NO+3NC | **AH164-SPK6B33** | **AH165-SPK6B33** | |
| | Spring/ manual return | — | 2NO+2NC | **AH164-SPK7B22** | **AH165-SPK7B22** | |
| | | | 3NO+3NC | **AH164-SPK7B33** | **AH165-SPK7B33** | |
| SK-1133 | Spring return | — | 2NO+2NC | **AH164-SPK1B22** | **AH165-SPK1B22** | |
| | | | 3NO+3NC | **AH164-SPK1B33** | **AH165-SPK1B33** | |
| Key with rectangular bezel | Maintained | A | 2NO+2NC | **AH164-JK3A22A** | **AH165-JK3A22A** |   |
| | | | 3NO+3NC | **AH164-JK3A33A** | **AH165-JK3A33A** | |
| | | E | 2NO+2NC | **AH164-JK3E22A** | **AH165-JK3E22A** | |
| | | | 3NO+3NC | **AH164-JK3E33A** | **AH165-JK3E33A** | |
| | | D | 2NO+2NC | **AH164-JK3D22A** | **AH165-JK3D22A** | |
| | | | 3NO+3NC | **AH164-JK3D33A** | **AH165-JK3D33A** | |
| | | C | 2NO+2NC | **AH164-JK3C22A** | **AH165-JK3C22A** | |
| | | | 3NO+3NC | **AH164-JK3C33A** | **AH165-JK3C33A** | |
| | Spring/ manual return | E | 2NO+2NC | **AH164-JK6E22A** | **AH165-JK6E22A** | |
| | | | 3NO+3NC | **AH164-JK6E33A** | **AH165-JK6E33A** | |
| | | D | 2NO+2NC | **AH164-JK6D22A** | **AH165-JK6D22A** | |
| | | | 3NO+3NC | **AH164-JK6D33A** | **AH165-JK6D33A** | |
| | Spring/ manual return | A | 2NO+2NC | **AH164-JK7A22A** | **AH165-JK7A22A** | |
| | | | 3NO+3NC | **AH164-JK7A33A** | **AH165-JK7A33A** | |
| | | E | 2NO+2NC | **AH164-JK7E22A** | **AH165-JK7E22A** | |
| | | | 3NO+3NC | **AH164-JK7E33A** | **AH165-JK7E33A** | |
| SK-1098 | Spring return | E | 2NO+2NC | **AH164-JK1E22A** | **AH165-JK1E22A** | |
| | | | 3NO+3NC | **AH164-JK1E33A** | **AH165-JK1E33A** | |
| Key with square bezel | Maintained | A | 2NO+2NC | **AH164-SJK3A22A** | **AH165-SJK3A22A** |   |
| | | | 3NO+3NC | **AH164-SJK3A33A** | **AH165-SJK3A33A** | |
| | | E | 2NO+2NC | **AH164-SJK3E22A** | **AH165-SJK3E22A** | |
| | | | 3NO+3NC | **AH164-SJK3E33A** | **AH165-SJK3E33A** | |
| | | D | 2NO+2NC | **AH164-SJK3D22A** | **AH165-SJK3D22A** | |
| | | | 3NO+3NC | **AH164-SJK3D33A** | **AH165-SJK3D33A** | |
| | | C | 2NO+2NC | **AH164-SJK3C22A** | **AH165-SJK3C22A** | |
| | | | 3NO+3NC | **AH164-SJK3C33A** | **AH165-SJK3C33A** | |
| | Spring/ manual return | E | 2NO+2NC | **AH164-SJK6E22A** | **AH165-SJK6E22A** | |
| | | | 3NO+3NC | **AH164-SJK6E33A** | **AH165-SJK6E33A** | |
| | | D | 2NO+2NC | **AH164-SJK6D22A** | **AH165-SJK6D22A** | |
| | | | 3NO+3NC | **AH164-SJK6D33A** | **AH165-SJK6D33A** | |
| | Spring/ manual return | A | 2NO+2NC | **AH164-SJK7A22A** | **AH165-SJK7A22A** | |
| | | | 3NO+3NC | **AH164-SJK7A33A** | **AH165-SJK7A33A** | |
| | | E | 2NO+2NC | **AH164-SJK7E22A** | **AH165-SJK7E22A** | |
| | | | 3NO+3NC | **AH164-SJK7E33A** | **AH165-SJK7E33A** | |
| SK-1132 | Spring return | E | 2NO+2NC | **AH164-SJK1E22A** | **AH165-SJK1E22A** | |
| | | | 3NO+3NC | **AH164-SJK1E33A** | **AH165-SJK1E33A** | |

- There are 6 available key types; A, B, C, D, E and F.
  Standard key code is A.
- Contact arrangement and operator position: *See page 147.*

•Key removable positions (JK, SJK)

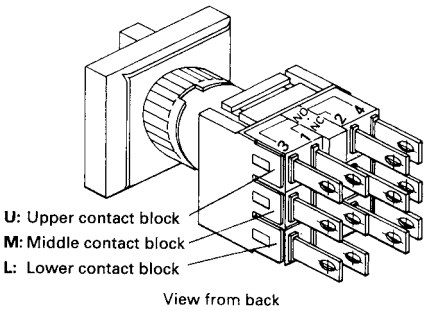
| Remvable position | | | | | | | |
|---|---|---|---|---|---|---|---|
| Code | A | B | C | D | E | F | G |

| Operation code | Key removable position |
|---|---|
| 3 | A, B, C, D, E, F, G |
| 6 | D, E, F |
| 7 | A, E, G |
| 1 | E |

•Key code No.

There are 6 available key types; A, B, C, D, E and F. Standard key code is A.

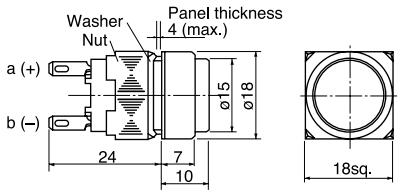
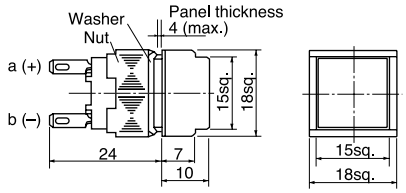
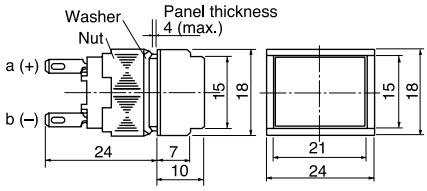
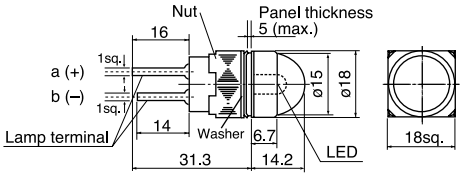
• **Contact block position**




• **Contact arrangement and operator position:**
3-position selector switch

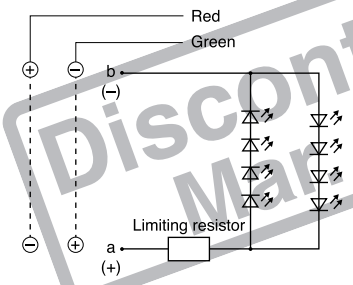
| Contact arrangement | | 2NO+2NC | 3NO+3NC |
|---|---|---|---|
| Operator position | Left | U L<br>1 2 1 2<br>3 4 3 4 | U M L<br>1 2 1 2 1 2<br>3 4 3 4 3 4 |
| | Center | 1 2 1 2<br>3 4 3 4 | 1 2 1 2 1 2<br>3 4 3 4 3 4 |
| | Right | 1 2 1 2<br>3 4 3 4 | 1 2 1 2 1 2<br>3 4 3 4 3 4 |

## ■ Pilot lights/without transformer

| Lens | Lamp | Voltage | AH164 type | AH165 (oil-tight) type | Dimensions, mm |
|---|---|---|---|---|---|
| Extended round SK-1139 | Flat LED | 24V DC | **AH164-Z□E3** | **AH165-Z□E3** |   |
| | Spot LED | 24V DC | **AH164-Z□E2** | **AH165-Z□E2** | |
| | Red/green LED | 24V DC | **AH164-ZRGE3** Discontinued Mar. 2007 | **AH165-ZRGE3** Discontinued Mar. 2007 | |
| | Incandescent | 24V AC/DC | **AH164-Z□E** | **AH165-Z□E** | |
| | Neon | 110V AC | **AH164-Z□H1** | **AH165-Z□H1** | |
| | | 220V AC | **AH164-Z□M1** | **AH165-Z□M1** | |
| Flush square SK-1138 | Flat LED | 24V DC | **AH164-ZS□E3** | **AH165-ZS□E3** |   |
| | Spot LED | 24V DC | **AH164-ZS□E2** | **AH165-ZS□E2** | |
| | Red/green LED | 24V DC | **AH164-ZSRGE3** Discontinued Mar. 2007 | **AH165-ZSRGE3** Discontinued Mar. 2007 | |
| | Incandescent | 24V AC/DC | **AH164-ZS□E** | **AH165-ZS□E** | |
| | Neon | 110V AC | **AH164-ZS□H1** | **AH165-ZS□H1** | |
| | | 220V AC | **AH164-ZS□M1** | **AH165-ZS□M1** | |
| Flush rectangular SK-1137 | Flat LED | 24V DC | **AH164-ZT□E3** | **AH165-ZT□E3** |   |
| | Spot LED | 24V DC | **AH164-ZT□E2** | **AH165-ZT□E2** | |
| | Red/green LED | 24V DC | **AH164-ZTRGE3** Discontinued Mar. 2007 | **AH165-ZTRGE3** Discontinued Mar. 2007 | |
| | Incandescent | 24V AC/DC | **AH164-ZT□E** | **AH165-ZT□E** | |
| | Neon | 110V AC | **AH164-ZT□H1** | **AH165-ZT□H1** | |
| | | 220V AC | **AH164-ZT□M1** | **AH165-ZT□M1** | |
| Dome AF87-45 | LED | 12V DC | – | **AH165-ZM□B2** |   |
| | | 24V DC | – | **AH165-ZM□E2** | |

Note: • The only color codes used for red/green LEDs are R and G. The color lens is transparent.
Red/green LEDs do not have high-brightness specifications.

Relationship between luminous color and terminal




Discontinued Mar. 2007

**•Lens color**

Replace the □ mark by the following lens color code

| Color | Green | Red | White | Yellow | Blue | Orange |
|---|---|---|---|---|---|---|
| Code | G | R | W | Y | S | O |

- The color lens is made of a tinted transparent material.
- A white pilot lights is fitted with a transparent color lens. (Except the neon lamp and dome).
- With wire-wrap pin terminals have a depth of 29mm. (Except for ZM type)

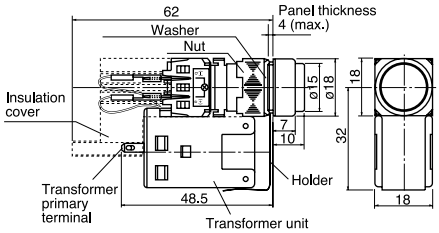
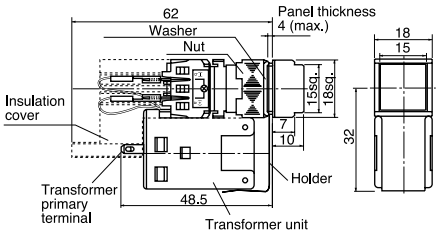
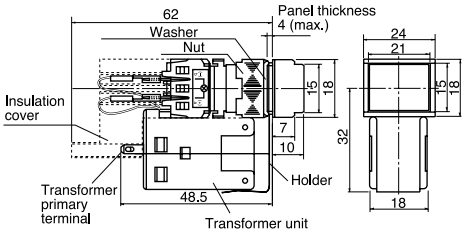
**• Lamp voltage**

Voltages other than above are available

| Code | LED | Incandescent | Neon |
|---|---|---|---|
| AA | 5V DC | – | – |
| A | 6V DC | 5V AC/DC | – |
| B | 12V DC | 12V AC/DC | – |
| K | – | – | 120V AC |
| P | – | – | 240V AC |

Note: Except for ZM types and red/green LED types

## ■ Pilot lights/with transformer

| Lens | Lamp | Voltage | AH164 type | AH165 (oil-tight) type | Dimensions, mm |
|---|---|---|---|---|---|
| Extended square AF90-944 | Flat LED | ■ Voltage H: 100-110V AC M: 200-220V AC | **AH164-Z□■3** | **AH165-Z□■3** |   |
| | Incandescent | | **AH164-Z□■** | **AH165-Z□■** | |
| Flush square AF90-943 | Flat LED | ■ Voltage H: 100-110V AC M: 200-220V AC | **AH164-ZS□■3** | **AH165-ZS□■3** |   |
| | Incandescent | | **AH164-ZS□■** | **AH165-ZS□■** | |
| Flush rectangular AF90-942 | Flat LED | ■ Voltage H: 100-110V AC M: 200-220V AC | **AH164-ZT□■3** | **AH165-ZT□■3** |   |
| | Incandescent | | **AH164-ZT□■** | **AH165-ZT□■** | |

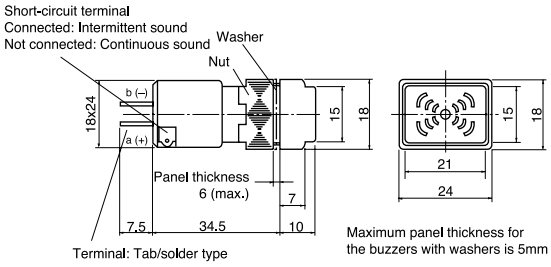
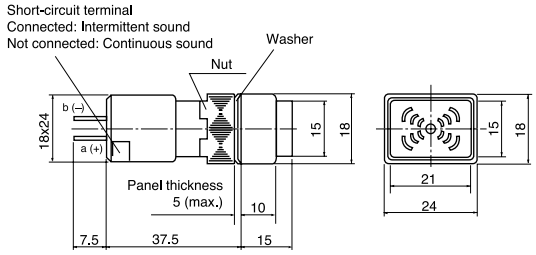
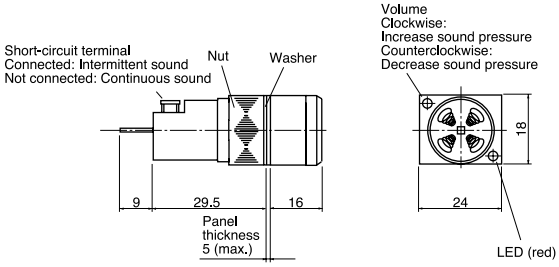
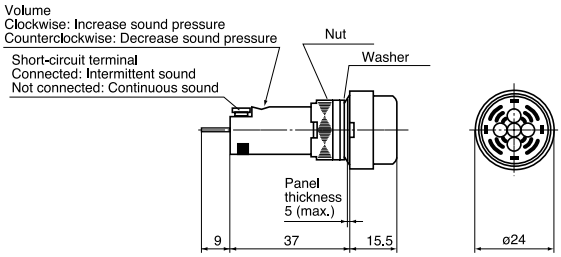
**•Lens color**

Replace the □ mark by the following lens color code

| Color | Green | Red | White | Yellow | Blue | Orange |
|---|---|---|---|---|---|---|
| Code | G | R | W | Y | S | O |

- The color lens is made of a tinted transparent material.
- A white pilot lights is fitted with a transparent color lens.

## ■ Buzzers

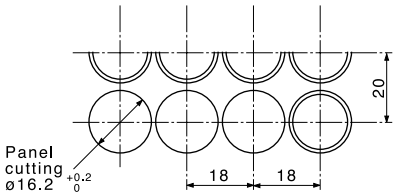
| Sound | Operating voltage | Type | Dimensions, mm |
|---|---|---|---|
| Standard<br> <br>AF87-317 | 6V AC | **AH164-TXBAAC** |  |
| | 6V DC | **AH164-TXBADC** | |
| | 12 to 24V AC/DC | **AH164-TXBE** | |
| | 35 to 48V AC/DC | **AH164-TXBF** | |
| Loud sound<br> <br>AF87-44 | 6V AC | **AH164-TX1BAAC** |  |
| | 6V DC | **AH164-TX1BADC** | |
| | 12 to 24V AC/DC | **AH164-TX1BE** | |
| | 35 to 48V AC/DC | **AH164-TX1BF** | |
| Loud sound with volume control<br> <br>AF93-297 | 6V AC/DC | **AH164-TX2BA** |  |
| | 12 to 24V AC/DC | **AH164-TX2BE** | |
| | 35 to 48V AC/DC | **AH164-TX2BF** | |
| Standard sound with volume control (IP54)<br> <br>AF96-243 | 6V AC/DC | **AH165-XBA** |  |
| | 12 to 24V AC/DC | **AH165-XBE** | |
| | 35 to 48V AC/DC | **AH165-XBF** | |

# AH164 and AH165
# Mounting space

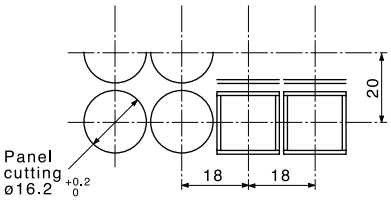
## ■ Mounting space, mm

### · Pushbuttons and pilot lights

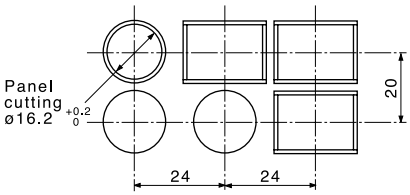
**Extended round head or lens**



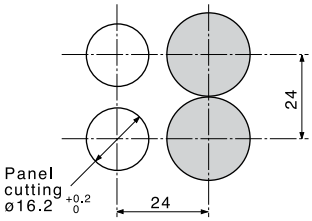

**Flush square head or lens**



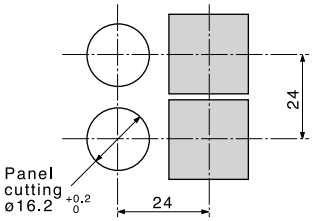

**Flush rectangular head or lens**



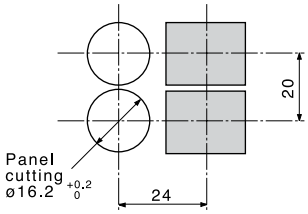

**Mushroom head**




**Convex square head**

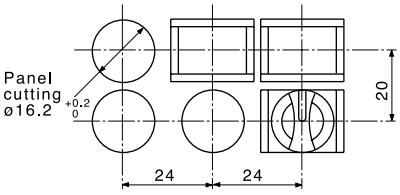



**Convex rectangular head**

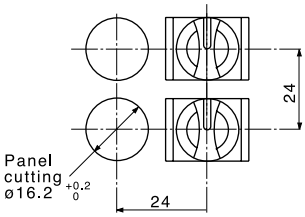



### · Selector switches

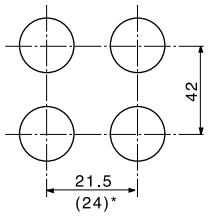
**·When mounting the selector switches near the pilot light**




**· When mounting the selector switches near each other**

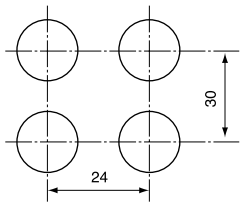



**· With transformer**

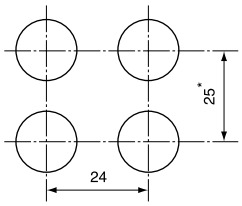



Note: *( ) For switch with flush rectangular head

**· When mounting the JM or RJM selector switches near each other (2NO+2NC only)**

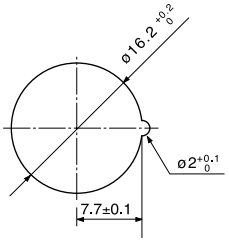



**· When mounting the JM or RJM selector switches near the other selector switch, pushbutton switch and pilot lights**

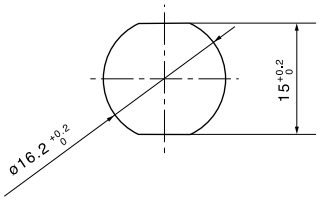



Note: * Mushroom, convex square, convex rectangular: 27

### · AH165-V, V1, V5, V6

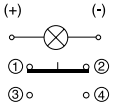
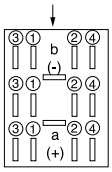
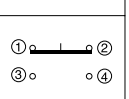
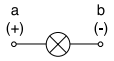



### · AH165-JM, RJM




## ■ Terminal number

### · AH164, 165

| Type | Wiring | Terminal position |
|---|---|---|
| Illuminated pushbuttons |  |  |
| Pushbuttons Selector switches (except for JM, RJM types) |  | |
| Pilot lights (without transformer) |  | |

## ■ Part number system

### Pushbuttons, illuminated pushbuttons and pilot lights

**AH165-2 FL R 11 E 3 – W**
① ② ③ ④ ⑤ ⑥ ⑦

① **Product category**
AH165-2: Oil-tight (Large operator)

② **Operator or lens**
• Operator for illuminated pushbutton
FL: Flush round head
FL5: Flush round head (Alternate)
SFL: Flush square head
SFL5: Flush square head (Alternate)
EL: Extended round head
EL5: Extended round head (Alternate)
SEL: Extended square head
SEL5: Extended square head (Alternate)
SCL: Concave square head
SCL5: Concave square head (Alternate)
ML: Mushroom head
YML: Mushroom head with square bezel
VL: Push-lock, turn-reset
YVL: Push-lock, turn-reset with square bezel

• Operator for pushbuttons
F: Flush round head
F5: Flush round head (Alternate)
SF: Flush square head
SF5: Flush square head (Alternate)
E: Extended round head
E5: Extended round head (Alternate)
SE: Extended square head
SE5: Extended square head (Alternate)
SCE: Concave square head
SCE5: Concave square head (Alternate)
M: Mushroom head
YM: Mushroom head with square bezel
V: Push-lock, turn-reset
YV: Push-lock, turn-reset with square bezel
S2: With selector ring
YS2: With selector ring with square bezel

• Lens for pilot lights
Z: Flush round
SZ: Flush square
ZE: Extended round
SEZ: Extended square

③ **Color of button or lens**

| Code | Color | Button | LED | Incandescent | Neon |
|---|---|---|---|---|---|
| G | Green | ○ | ○ | ○ | ○ |
| R | Red | ○ | ○ | ○ | ○ (Orange) |
| B | Black* | ○ | – | – | – |
| Y | Yellow | ○ | ○ | ○ | ○ (Orange) |
| W | White | ○ | ○ (Orange) | ○ | ○ (Orange) |
| S | Blue | ○ | ○ | ○ | ○ (Green) |
| O | Orange | ○ | ○ (Amber) | ○ | ○ |

Notes: • ( ): indicates luminous color
* Not available for illuminated types

④ **Contact arrangement (except pilot lights)**
11: 1NO+1NC
22: 2NO+2NC
33: 3NO+3NC

⑤ **Lamp voltage**

| Code | LED | Incandescent | Neon |
|---|---|---|---|
| AA | 5V DC | – | – |
| A | 6V DC | 5V AC/DC | – |
| B | 12V DC | 12V AC/DC | – |
| E | 24V DC | 24V AC/DC | – |
| H | – | – | 110V AC |
| K | – | – | 120V AC |
| M | – | – | 220V AC |
| P | – | – | 240V AC |

⑥ **Type of lamp**
Blank: Incandescent
1: Neon
3: Flat LED

⑦ **Terminal**
Blank: Solder/tab
W: Wire-wrap

# AH165-2
# Part number system

## ■ Part number system

### Selector switches

**AH165-2 J 2 B 11 A – W**
① ② ③ ④ ⑤ ⑥ ⑦

① **Product category**
AH165-2: Oil-tight (Large operator)

② **Operator**
• Knob and key type
2-position (operating angle 90˚)
P: Knob
YP: Knob with square bezel
J: Key
YJ: Key with square bezel

3-position (operating angle 45˚)
P: Knob
YP: Knob with square bezel
J: Key
YJ: Key with square bezel

• Lever type
2-position (operating angle 45˚)
H: Lever
SH: Lever with square bezel
Note: The operation angle is 45˚ on the upper and lower side.

③ **Operation**
2: 2-position, maintained
0: 2-position, spring return*
3: 3-position, maintained
6: 3-position, spring/manual return (Left to center)
7: 3-position, spring/manual return (Right to center)
1: 3-position, spring return
Note: * Except for H and SH types

④ **Color of knob, lever or key removable position**
• Color of knob or lever
B: Black

• Key removable position

| Code | 2-position | | 3-position | | | |
|---|---|---|---|---|---|---|
| | 2 | 0 | 1 | 3 | 6 | 7 |
| A | ⊘ | ⊘ | – | ⊘ | – | ⊘ |
| B | ⊗ | – | – | ⊗ | – | – |
| C | – | – | – | ⊛ | – | – |
| D | ⊘ | – | – | ⊘ | | – |
| E | – | – | ⊕ | | | |
| F | – | – | – | ⊕ | | – |
| G | – | – | – | ⊕ | – | ⊕ |

⑤ **Contact arrangement**
11: 1NO+1NC*
22: 2NO+2NC
33: 3NO+3NC
Note: * Except for 3-position

⑥ **Key type No.**
A (standard), B, C, D, E, F

⑦ **Terminal**
Blank: Solder/tab
W: Wire-wrap

### Illuminated selector switches

**AH165-2 PL 2 G 11 E 3**
① ② ③ ④ ⑤ ⑥ ⑦

① **Product category**
AH165-2: Oil-tight (Large operator)

② **Operator**
• 2-position (operating angle 90˚)
PL: Knob

• 3-position (operating angle 45˚)
PL: Knob

③ **Operation**
2: 2-position, maintained
3: 3-position, maintained

④ **Color of knob**

| Code | Color | LED | Incandescent | Neon |
|---|---|---|---|---|
| G | Green | ○ | ○ | ○ |
| R | Red | ○ | ○ | ○ (Orange) |
| Y | Yellow | ○ | ○ | ○ (Orange) |
| W | White | ○ (Orange) | ○ | ○ (Orange) |
| S | Blue | ○ | ○ | ○ (Green) |
| O | Orange | ○ (Amber) | ○ | ○ |

Notes: • ( ): indicates luminous color
• The part other than the arrow of the knob is black.

⑤ **Contact arrangement**
11: 1NO+1NC*
22: 2NO+2NC
Note: * Except for 3-position

⑥ **Lamp voltage**

| Code | LED | Incandescent | Neon |
|---|---|---|---|
| AA | 5V DC | – | – |
| A | 6V DC | 5V AC/DC | – |
| B | 12V DC | 12V AC/DC | – |
| E | 24V DC | 24V AC/DC | – |
| H | – | – | 110V AC |
| K | – | – | 120V AC |
| M | – | – | 220V AC |
| P | – | – | 240V AC |

⑦ **Type of lamp**
Blank: Incandescent
1: Neon
3: Flat LED
Note: Terminal with solder/tab only

## ■ Standards approved

| | |
|---|---|
| UL508 | File No. E44592 |
| CSA C22.2 No.14 | File No. LR20479 (except for AH165-2Z, 2ZE, 2SZ, 2SZE)<br>File No. LR84365 (for AH165-2Z, 2ZE, 2SZ, 2SZE) |
| TÜV: EN60947-5-1 | Pushbutton, illuminated pushbutton: R9250087<br>Selector (except for AH165-2H, SH), illuminated selector: R9250088<br>Selector (for AH165-2H, SH): R9250087<br>Pilot lights: R9250089 |

## ■ Specifications (Indoor use)

| Item | | AH165-2 |
|---|---|---|
| Rated insulation voltage | | 250V AC/DC |
| Ambient temperature<br>(no condensation or no icing) | | –10 to +70°C *1 |
| Humidity | | 45 to 85%RH (at –5 to +40°C), no condensation or no icing |
| Durability<br>(operations) | Mechanical | Pushbutton and illuminated pushubutton switch<br>Momentary action: 1 million<br>Alternate action: 250,000<br>Push-lock, turn-reset: 100,000<br>With selector ring: 250,000<br>Selector and illuminated selector switch: 250,000*2 |
| | Electrical | 100,000 (220V AC 0.7A) |
| Dielectric strength | | 2000V AC, 1 minute<br>(Between lamp and contact terminals: 1500V AC, 1 minute) |
| Conditional short-circuit current | | 1000A |
| Short-circuit protective device | | Fuse 1A |
| Pollution degree | | 3 |
| Vibration | | Resonance: 10 to 55Hz, double amplitude 0.1mm<br>Constant: 16.7Hz, double amplitude 3mm |
| Shock | | Malfunction durability: 100m/s$^2$<br>Mechanical durability: 500m/s$^2$ |
| Operating frequency | | 1200 operation/hour (on-load factor: 40%) |
| Insulation resistance | | 100MΩ or more (500V DC megger) |
| Operator protection | | IP65 |

Notes: *1 For illuminated pushbutton, illuminated selector switch and pilot light: –10 to +55°C
*2 Key insertion/removal durability for selector switch key types: 10,000

## ■ Contact ratings

*See page 135*

## ■ Lamp ratings

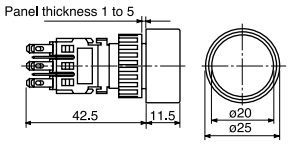
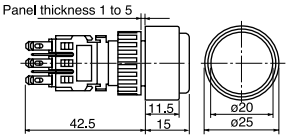
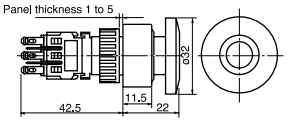
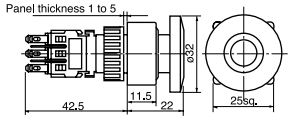
| Rated operational voltage | Consumption | | |
|---|---|---|---|
| | LED<br>DC | Incandescent<br>AC/DC | Neon<br>AC |
| 5V | 14mA (Yellow: 28mA) | 0.45W (6V) | – |
| 6V | 14mA (Yellow: 28mA) | – | – |
| 12V | 14mA | 0.55W (14V) | – |
| 24V | 14mA | 0.55W (28V) | – |
| 110V | – | – | 0.19VA |
| 120V | – | – | 0.21VA |
| 220V | – | – | 0.38VA |
| 240V | – | – | 0.42VA |

Notes: For the incandescent lamps, the values in parentheses indicate the rated voltage of the lamps.

## ■ Contact reliability

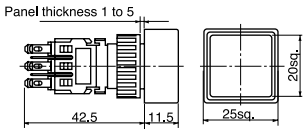
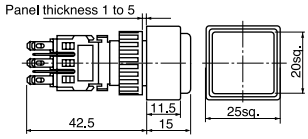
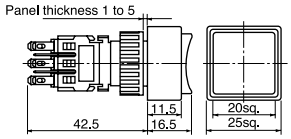
FUJI has confirmed that the unit can be used in 1mA circuit conditions at 5V AC or DC. The operable range may vary depending on the ambient conditions and type of load.

## ■ Illuminated pushbutton switches

| Operator | Lamp | Voltage | Contact | Momentary action Type | Alternate action Type | Dimensions, mm |
|---|---|---|---|---|---|---|
| Flush round head AF87-211 | Flat LED | 24V DC | 1NO+1NC | **AH165-2FL□11E3** | **AH165-2FL5□11E3** |   |
| | | | 2NO+2NC | **AH165-2FL□22E3** | **AH165-2FL5□22E3** | |
| | | | 3NO+3NC | **AH165-2FL□33E3** | **AH165-2FL5□33E3** | |
| | Incandescent | 24V AC/DC | 1NO+1NC | **AH165-2FL□11E** | **AH165-2FL5□11E** | |
| | | | 2NO+2NC | **AH165-2FL□22E** | **AH165-2FL5□22E** | |
| | | | 3NO+3NC | **AH165-2FL□33E** | **AH165-2FL5□33E** | |
| | Neon | 110V AC | 1NO+1NC | **AH165-2FL□11H1** | **AH165-2FL5□11H1** | |
| | | | 2NO+2NC | **AH165-2FL□22H1** | **AH165-2FL5□22H1** | |
| | | | 3NO+3NC | **AH165-2FL□33H1** | **AH165-2FL5□33H1** | |
| | | 220V AC | 1NO+1NC | **AH165-2FL□11M1** | **AH165-2FL5□11M1** | |
| | | | 2NO+2NC | **AH165-2FL□22M1** | **AH165-2FL5□22M1** | |
| | | | 3NO+3NC | **AH165-2FL□33M1** | **AH165-2FL5□33M1** | |
| Extended round head AF87-210 | Flat LED | 24V DC | 1NO+1NC | **AH165-2EL□11E3** | **AH165-2EL5□11E3** |   |
| | | | 2NO+2NC | **AH165-2EL□22E3** | **AH165-2EL5□22E3** | |
| | | | 3NO+3NC | **AH165-2EL□33E3** | **AH165-2EL5□33E3** | |
| | Incandescent | 24V AC/DC | 1NO+1NC | **AH165-2EL□11E** | **AH165-2EL5□11E** | |
| | | | 2NO+2NC | **AH165-2EL□22E** | **AH165-2EL5□22E** | |
| | | | 3NO+3NC | **AH165-2EL□33E** | **AH165-2EL5□33E** | |
| | Neon | 110V AC | 1NO+1NC | **AH165-2EL□11H1** | **AH165-2EL5□11H1** | |
| | | | 2NO+2NC | **AH165-2EL□22H1** | **AH165-2EL5□22H1** | |
| | | | 3NO+3NC | **AH165-2EL□33H1** | **AH165-2EL5□33H1** | |
| | | 220V AC | 1NO+1NC | **AH165-2EL□11M1** | **AH165-2EL5□11M1** | |
| | | | 2NO+2NC | **AH165-2EL□22M1** | **AH165-2EL5□22M1** | |
| | | | 3NO+3NC | **AH165-2EL□33M1** | **AH165-2EL5□33M1** | |
| Mushroom head AF87-221 | Flat LED | 24V DC | 1NO+1NC | **AH165-2ML□11E3** | **–** |   |
| | | | 2NO+2NC | **AH165-2ML□22E3** | **–** | |
| | | | 3NO+3NC | **AH165-2ML□33E3** | **–** | |
| | Incandescent | 24V AC/DC | 1NO+1NC | **AH165-2ML□11E** | **–** | |
| | | | 2NO+2NC | **AH165-2ML□22E** | **–** | |
| | | | 3NO+3NC | **AH165-2ML□33E** | **–** | |
| | Neon | 110V AC | 1NO+1NC | **AH165-2ML□11H1** | **–** | |
| | | | 2NO+2NC | **AH165-2ML□22H1** | **–** | |
| | | | 3NO+3NC | **AH165-2ML□33H1** | **–** | |
| | | 220V AC | 1NO+1NC | **AH165-2ML□11M1** | **–** | |
| | | | 2NO+2NC | **AH165-2ML□22M1** | **–** | |
| | | | 3NO+3NC | **AH165-2ML□33M1** | **–** | |
| Mushroom head with square bezel AF87-220 | Flat LED | 24V DC | 1NO+1NC | **AH165-2YML□11E3** | **–** |   |
| | | | 2NO+2NC | **AH165-2YML□22E3** | **–** | |
| | | | 3NO+3NC | **AH165-2YML□33E3** | **–** | |
| | Incandescent | 24V AC/DC | 1NO+1NC | **AH165-2YML□11E** | **–** | |
| | | | 2NO+2NC | **AH165-2YML□22E** | **–** | |
| | | | 3NO+3NC | **AH165-2YML□33E** | **–** | |
| | Neon | 110V AC | 1NO+1NC | **AH165-2YML□11H1** | **–** | |
| | | | 2NO+2NC | **AH165-2YML□22H1** | **–** | |
| | | | 3NO+3NC | **AH165-2YML□33H1** | **–** | |
| | | 220V AC | 1NO+1NC | **AH165-2YML□11M1** | **–** | |
| | | | 2NO+2NC | **AH165-2YML□22M1** | **–** | |
| | | | 3NO+3NC | **AH165-2YML□33M1** | **–** | |

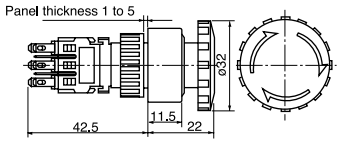
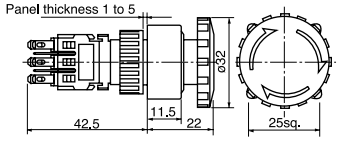
Note: Replace the □ mark by the following color code, *see page 157.*

## ■ Illuminated pushbutton switches

| Operator | Lamp | Voltage | Contact | Momentary action Type | Alternate action Type | Dimensions, mm |
|---|---|---|---|---|---|---|
| Flush square head | Flat LED | 24V DC | 1NO+1NC | **AH165-2SFL□11E3** | **AH165-2SFL5□11E3** |   |
| | | | 2NO+2NC | **AH165-2SFL□22E3** | **AH165-2SFL5□22E3** | |
| | | | 3NO+3NC | **AH165-2SFL□33E3** | **AH165-2SFL5□33E3** | |
| AF87-201 | Incandescent | 24V AC/DC | 1NO+1NC | **AH165-2SFL□11E** | **AH165-2SFL5□11E** | |
| | | | 2NO+2NC | **AH165-2SFL□22E** | **AH165-2SFL5□22E** | |
| | | | 3NO+3NC | **AH165-2SFL□33E** | **AH165-2SFL5□33E** | |
| | Neon | 110V AC | 1NO+1NC | **AH165-2SFL□11H1** | **AH165-2SFL5□11H1** | |
| | | | 2NO+2NC | **AH165-2SFL□22H1** | **AH165-2SFL5□22H1** | |
| | | | 3NO+3NC | **AH165-2SFL□33H1** | **AH165-2SFL5□33H1** | |
| | | 220V AC | 1NO+1NC | **AH165-2SFL□11M1** | **AH165-2SFL5□11M1** | |
| | | | 2NO+2NC | **AH165-2SFL□22M1** | **AH165-2SFL5□22M1** | |
| | | | 3NO+3NC | **AH165-2SFL□33M1** | **AH165-2SFL5□33M1** | |
| Extended square head | Flat LED | 24V DC | 1NO+1NC | **AH165-2SEL□11E3** | **AH165-2SEL5□11E3** |   |
| | | | 2NO+2NC | **AH165-2SEL□22E3** | **AH165-2SEL5□22E3** | |
| | | | 3NO+3NC | **AH165-2SEL□33E3** | **AH165-2SEL5□33E3** | |
| AF87-200 | Incandescent | 24V AC/DC | 1NO+1NC | **AH165-2SEL□11E** | **AH165-2SEL5□11E** | |
| | | | 2NO+2NC | **AH165-2SEL□22E** | **AH165-2SEL5□22E** | |
| | | | 3NO+3NC | **AH165-2SEL□33E** | **AH165-2SEL5□33E** | |
| | Neon | 110V AC | 1NO+1NC | **AH165-2SEL□11H1** | **AH165-2SEL5□11H1** | |
| | | | 2NO+2NC | **AH165-2SEL□22H1** | **AH165-2SEL5□22H1** | |
| | | | 3NO+3NC | **AH165-2SEL□33H1** | **AH165-2SEL5□33H1** | |
| | | 220V AC | 1NO+1NC | **AH165-2SEL□11M1** | **AH165-2SEL5□11M1** | |
| | | | 2NO+2NC | **AH165-2SEL□22M1** | **AH165-2SEL5□22M1** | |
| | | | 3NO+3NC | **AH165-2SEL□33M1** | **AH165-2SEL5□33M1** | |
| Concave square head | Flat LED | 24V DC | 1NO+1NC | **AH165-2SCL□11E3** | **AH165-2SCL5□11E3** |   |
| | | | 2NO+2NC | **AH165-2SCL□22E3** | **AH165-2SCL5□22E3** | |
| | | | 3NO+3NC | **AH165-2SCL□33E3** | **AH165-2SCL5□33E3** | |
| AF87-199 | Incandescent | 24V AC/DC | 1NO+1NC | **AH165-2SCL□11E** | **AH165-2SCL5□11E** | |
| | | | 2NO+2NC | **AH165-2SCL□22E** | **AH165-2SCL5□22E** | |
| | | | 3NO+3NC | **AH165-2SCL□33E** | **AH165-2SCL5□33E** | |
| | Neon | 110V AC | 1NO+1NC | **AH165-2SCL□11H1** | **AH165-2SCL5□11H1** | |
| | | | 2NO+2NC | **AH165-2SCL□22H1** | **AH165-2SCL5□22H1** | |
| | | | 3NO+3NC | **AH165-2SCL□33H1** | **AH165-2SCL5□33H1** | |
| | | 220V AC | 1NO+1NC | **AH165-2SCL□11M1** | **AH165-2SCL5□11M1** | |
| | | | 2NO+2NC | **AH165-2SCL□22M1** | **AH165-2SCL5□22M1** | |
| | | | 3NO+3NC | **AH165-2SCL□33M1** | **AH165-2SCL5□33M1** | |

Note: Replace the □ mark by the following color code, *see page 157.*

## ■ Illuminated pushbutton switches

| Operator | Lamp | Voltage | Contact | Type | Dimensions, mm |
|---|---|---|---|---|---|
| Push-lock, turn-reset AF87-219 | Flat LED | 24V DC | 1NO+1NC | **AH165-2VL□11E3** |   |
| | | | 2NO+2NC | **AH165-2VL□22E3** | |
| | | | 3NO+3NC | **AH165-2VL□33E3** | |
| | Incandescent | 24V AC/DC | 1NO+1NC | **AH165-2VL□11E** | |
| | | | 2NO+2NC | **AH165-2VL□22E** | |
| | | | 3NO+3NC | **AH165-2VL□33E** | |
| | Neon | 110V AC | 1NO+1NC | **AH165-2VL□11H1** | |
| | | | 2NO+2NC | **AH165-2VL□22H1** | |
| | | | 3NO+3NC | **AH165-2VL□33H1** | |
| | | 220V AC | 1NO+1NC | **AH165-2VL□11M1** | |
| | | | 2NO+2NC | **AH165-2VL□22M1** | |
| | | | 3NO+3NC | **AH165-2VL□33M1** | |
| Push-lock, turn-reset with square bezel AF87-218 | Flat LED | 24V DC | 1NO+1NC | **AH165-2YVL□11E3** |   |
| | | | 2NO+2NC | **AH165-2YVL□22E3** | |
| | | | 3NO+3NC | **AH165-2YVL□33E3** | |
| | Incandescent | 24V AC/DC | 1NO+1NC | **AH165-2YVL□11E** | |
| | | | 2NO+2NC | **AH165-2YVL□22E** | |
| | | | 3NO+3NC | **AH165-2YVL□33E** | |
| | Neon | 110V AC | 1NO+1NC | **AH165-2YVL□11H1** | |
| | | | 2NO+2NC | **AH165-2YVL□22H1** | |
| | | | 3NO+3NC | **AH165-2YVL□33H1** | |
| | | 220V AC | 1NO+1NC | **AH165-2YVL□11M1** | |
| | | | 2NO+2NC | **AH165-2YVL□22M1** | |
| | | | 3NO+3NC | **AH165-2YVL□33M1** | |

• **Button color**
Replace the □ mark by the following button color code

| Color | Green | Red | White | Yellow | Blue | Orange |
|---|---|---|---|---|---|---|
| Code | G | R | W | Y | S | O |

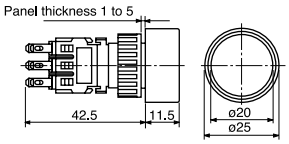
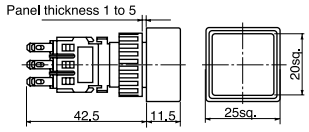
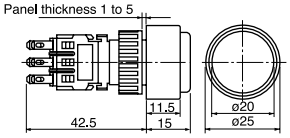
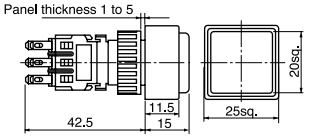
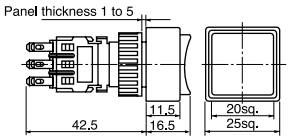
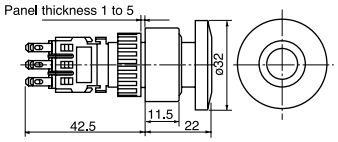
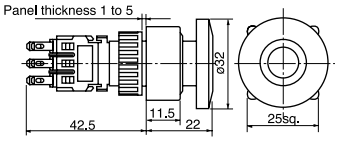
• With wire-wrap pin terminals have a depth of 47mm.

• A white illuminated pushbutton is fitted with a transparent color lens.
• The color lens is made of a tinted transparent material.

• **Lamp voltage**
Voltages other than above are available

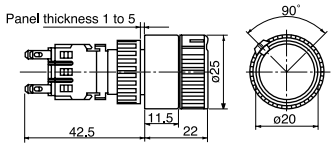
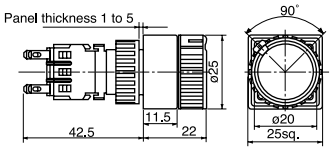
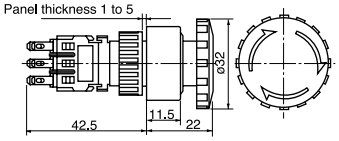
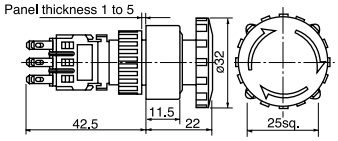
| Code | LED | Incandescent | Neon |
|---|---|---|---|
| AA | 5V DC | – | – |
| A | 6V DC | 5V AC/DC | – |
| B | 12V DC | 12V AC/DC | – |
| K | – | – | 120V AC |
| P | – | – | 240V AC |

## ■ Pushbutton switches

| Operator | Contact | Momentary action | Alternate action | Dimensions, mm |
|---|---|---|---|---|
| | | Type | Type | |
| Flush round head AF87-211 | 1NO+1NC | **AH165-2F□11** | **AH165-2F5□11** |   |
| | 2NO+2NC | **AH165-2F□22** | **AH165-2F5□22** | |
| | 3NO+3NC | **AH165-2F□33** | **AH165-2F5□33** | |
| Flush square head AF87-201 | 1NO+1NC | **AH165-2SF□11** | **AH165-2SF5□11** |   |
| | 2NO+2NC | **AH165-2SF□22** | **AH165-2SF5□22** | |
| | 3NO+3NC | **AH165-2SF□33** | **AH165-2SF5□33** | |
| Extended round head AF87-210 | 1NO+1NC | **AH165-2E□11** | **AH165-2E5□11** |   |
| | 2NO+2NC | **AH165-2E□22** | **AH165-2E5□22** | |
| | 3NO+3NC | **AH165-2E□33** | **AH165-2E5□33** | |
| Extended square head AF87-200 | 1NO+1NC | **AH165-2SE□11** | **AH165-2SE5□11** |   |
| | 2NO+2NC | **AH165-2SE□22** | **AH165-2SE5□22** | |
| | 3NO+3NC | **AH165-2SE□33** | **AH165-2SE5□33** | |
| Concave square head AF87-199 | 1NO+1NC | **AH165-2SCE□11** | **AH165-2SCE5□11** |   |
| | 2NO+2NC | **AH165-2SCE□22** | **AH165-2SCE5□22** | |
| | 3NO+3NC | **AH165-2SCE□33** | **AH165-2SCE5□33** | |
| Mushroom head AF87-215 | 1NO+1NC | **AH165-2M□11** | – |   |
| | 2NO+2NC | **AH165-2M□22** | – | |
| | 3NO+3NC | **AH165-2M□33** | – | |
| Mushroom head with square bezel AF87-214 | 1NO+1NC | **AH165-2YM□11** | – |   |
| | 2NO+2NC | **AH165-2YM□22** | – | |
| | 3NO+3NC | **AH165-2YM□33** | – | |

Note: Replace the □ mark by the following color code, *see page 159.*

## ■ Pushbutton switches

| Operator | Contact | Type | Dimensions, mm |
|---|---|---|---|
| With selector ring AF87-207 | 2NO+2NC | **AH165-2S2□22** |   |
| With selector ring with square bezel AF87-206 | 2NO+2NC | **AH165-2YS2□22** |   |
| Push-lock, turn-reset AF87-210 | 1NO+1NC<br>2NO+2NC<br>3NO+3NC | **AH165-2V□11**<br>**AH165-2V□22**<br>**AH165-2V□33** |   |
| Push-lock, turn-reset with square bezel AF87-200 | 1NO+1NC<br>2NO+2NC<br>3NO+3NC | **AH165-2YV□11**<br>**AH165-2YV□22**<br>**AH165-2YV□33** |   |

• **Button color**

Replace the □ mark by the following button color code

| Color | Green | Red | Black | White | Blue | Yellow | Orange |
|---|---|---|---|---|---|---|---|
| Code | G | R | B | W | S | Y | O |

• **Contact arrangement and operator position**

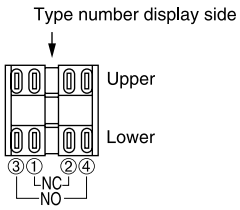
AH165-2S, 2YS

| Ring / Button | Left | Right |
|---|---|---|
| Free | U L<br>1 2 1 2<br>3 4 3 4 | U L<br>1 2 1 2<br>3 4 3 4 |
| Depressed | 1 2 1 2<br>3 4 3 4 | 1 2 1 2<br>3 4 3 4 |

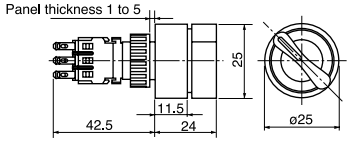
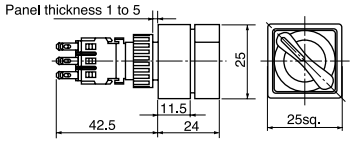
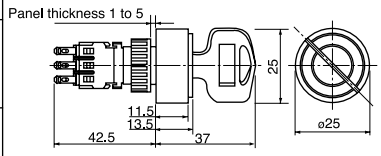
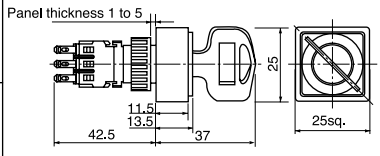
U: Upper contact block
L: Lower contact block

• The color lens is made of a tinted transparent material. (Except for M, YM, V, YV, types)
• A white pushbutton is fitted with a transparent color lens. A black pushbutton consists of a transparent color lens and an attached black legend plate. (Except for M, YM, V, YV, types)
• With wire-wrap pin terminals have a depth of 47mm.

• **Terminal number and contact block position**



## ■ Selector switches/2-position (90-degree)

| Operator | Operation | Key removable position | Contact | Type | Dimensions, mm |
|---|---|---|---|---|---|
| Knob AF02-111 | Maintained | – | 1NO+1NC | **AH165-2P2B11** |   |
| | | | 2NO+2NC | **AH165-2P2B22** | |
| | | | 3NO+3NC | **AH165-2P2B33** | |
| | Spring return | – | 1NO+1NC | **AH165-2P0B11** | |
| | | | 2NO+2NC | **AH165-2P0B22** | |
| | | | 3NO+3NC | **AH165-2P0B33** | |
| Knob AF02-112 | Maintained | – | 1NO+1NC | **AH165-2YP2B11** |   |
| | | | 2NO+2NC | **AH165-2YP2B22** | |
| | | | 3NO+3NC | **AH165-2YP2B33** | |
| | Spring return | – | 1NO+1NC | **AH165-2YP0B11** | |
| | | | 2NO+2NC | **AH165-2YP0B22** | |
| | | | 3NO+3NC | **AH165-2YP0B33** | |
| Key AF02-113 | Maintained | A | 1NO+1NC | **AH165-2J2A11A** |   |
| | | | 2NO+2NC | **AH165-2J2A22A** | |
| | | | 3NO+3NC | **AH165-2J2A33A** | |
| | | B | 1NO+1NC | **AH165-2J2B11A** | |
| | | | 2NO+2NC | **AH165-2J2B22A** | |
| | | | 3NO+3NC | **AH165-2J2B33A** | |
| | | D | 1NO+1NC | **AH165-2J2D11A** | |
| | | | 2NO+2NC | **AH165-2J2D22A** | |
| | | | 3NO+3NC | **AH165-2J2D33A** | |
| | Spring return | A | 1NO+1NC | **AH165-2J0A11A** | |
| | | | 2NO+2NC | **AH165-2J0A22A** | |
| | | | 3NO+3NC | **AH165-2J0A33A** | |
| Key with square bezel AF02-114 | Maintained | A | 1NO+1NC | **AH165-2YJ2A11A** |   |
| | | | 2NO+2NC | **AH165-2YJ2A22A** | |
| | | | 3NO+3NC | **AH165-2YJ2A33A** | |
| | | B | 1NO+1NC | **AH165-2YJ2B11A** | |
| | | | 2NO+2NC | **AH165-2YJ2B22A** | |
| | | | 3NO+3NC | **AH165-2YJ2B33A** | |
| | | D | 1NO+1NC | **AH165-2YJ2D11A** | |
| | | | 2NO+2NC | **AH165-2YJ2D22A** | |
| | | | 3NO+3NC | **AH165-2YJ2D33A** | |
| | Spring return | A | 1NO+1NC | **AH165-2YJ0A11A** | |
| | | | 2NO+2NC | **AH165-2YJ0A22A** | |
| | | | 3NO+3NC | **AH165-2YJ0A33A** | |

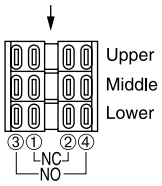
- The key can be removed only at the following positions:

A: B: D:

- For spring-return selector switches, the key can be removed at position A.
- There are 6 available key types; A, B, C, D, E and F. Standard key code is A.
- With wire-wrap pin terminals have a depth of 47mm.

- **Terminal number and contact block position**

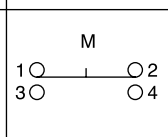
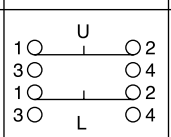
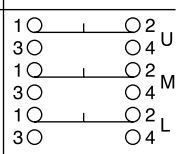
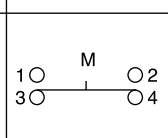
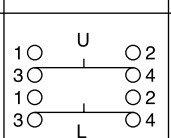
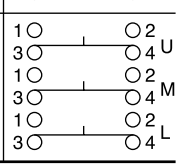
Type number display side




Contact arrangement (terminal No.: common)
1NO+1NC: Middle
2NO+2NC: Upper, lower
3NO+3NC: Upper, middle, lower

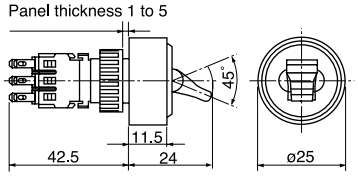
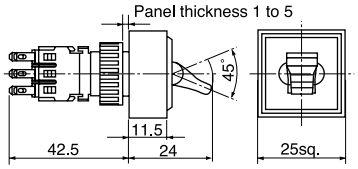
- **Contact arrangement and operator positions:**

2-position

| Contact arrangement | | 1NO+1NC | 2NO+2NC | 3NO+3NC |
|---|---|---|---|---|
| Operator position | Left |   |   |   |
| | Right |   |   |   |

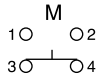
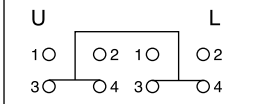
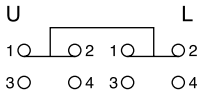
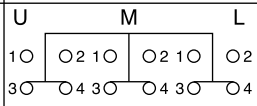
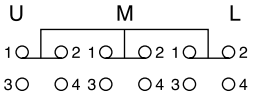
U: Upper contact block
M: Middle contact block
L: Lower contact block

## ■ Selector switches/2-position

| Operator | Lever color | Operation | Contact | Type | Dimensions, mm |
|---|---|---|---|---|---|
| Lever AF87-209 | Black | Maintained | 1NO+1NC<br>2NO+2NC<br>3NO+3NC | **AH165-2H2B11**<br>**AH165-2H2B22**<br>**AH165-2H2B33** |   |
| Lever with square bezel AF87-203 | Black | Maintained | 1NO+1NC<br>2NO+2NC<br>3NO+3NC | **AH165-2SH2B11**<br>**AH165-2SH2B22**<br>**AH165-2SH2B33** |   |

• **Contact arrangement and operator position**

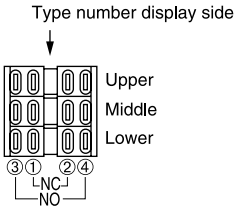
AH165-2H, 2SH

| Lever / Contact block | Up | Down |
|---|---|---|
| 1NO+1NC |   | |
| 2NO+2NC |   |   |
| 3NO+3NC |   |   |

U: Upper contact block
M: Middle contact block
L: Lower contact block

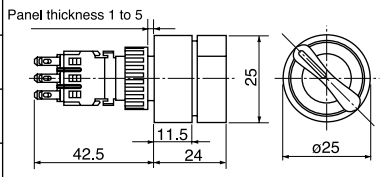
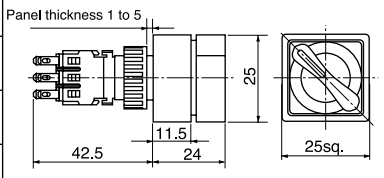
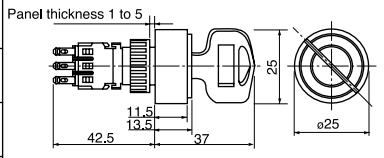
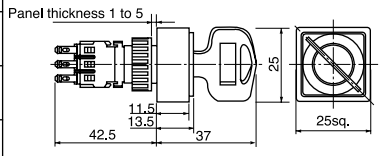
• With wire-wrap pin terminals have a depth of 47mm.

• **Terminal number and contact block position**




Contact arrangement (terminal No.: common)
1NO+1NC: Middle
2NO+2NC: Upper, lower
3NO+3NC: Upper, middle, lower

## ■ Selector switches/3-position (45-degree)

| Operator | Operation | Key removable position | Contact | Type | Dimensions, mm |
|---|---|---|---|---|---|
| Knob AF87-208 | Mainteined | – | 2NO+2NC<br>3NO+3NC | **AH165-2P3B22**<br>**AH165-2P3B33** |   |
| | Spring/ manual return | – | 2NO+2NC<br>3NO+3NC | **AH165-2P6B22**<br>**AH165-2P6B33** | |
| | Spring/ manual return | – | 2NO+2NC<br>3NO+3NC | **AH165-2P7B22**<br>**AH165-2P7B33** | |
| | Spring return | – | 2NO+2NC<br>3NO+3NC | **AH165-2P1B22**<br>**AH165-2P1B33** | |
| Knob with square bezel AF87-202 | Mainteined | – | 2NO+2NC<br>3NO+3NC | **AH165-2YP3B22**<br>**AH165-2YP3B33** |   |
| | Spring/ manual return | – | 2NO+2NC<br>3NO+3NC | **AH165-2YP6B22**<br>**AH165-2YP6B33** | |
| | Spring/ manual return | – | 2NO+2NC<br>3NO+3NC | **AH165-2YP7B22**<br>**AH165-2YP7B33** | |
| | Spring return | – | 2NO+2NC<br>3NO+3NC | **AH165-2YP1B22**<br>**AH165-2YP1B33** | |
| Key AF87-223 | Mainteined | A | 2NO+2NC<br>3NO+3NC | **AH165-2J3A22A**<br>**AH165-2J3A33A** |   |
| | | E | 2NO+2NC<br>3NO+3NC | **AH165-2J3E22A**<br>**AH165-2J3E33A** | |
| | | D | 2NO+2NC<br>3NO+3NC | **AH165-2J3D22A**<br>**AH165-2J3D33A** | |
| | | C | 2NO+2NC<br>3NO+3NC | **AH165-2J3C22A**<br>**AH165-2J3C33A** | |
| | Spring/ manual return | E | 2NO+2NC<br>3NO+3NC | **AH165-2J6E22A**<br>**AH165-2J6E33A** | |
| | | D | 2NO+2NC<br>3NO+3NC | **AH165-2J6D22A**<br>**AH165-2J6D33A** | |
| | Spring/ manual return | A | 2NO+2NC<br>3NO+3NC | **AH165-2J7A22A**<br>**AH165-2J7A33A** | |
| | | E | 2NO+2NC<br>3NO+3NC | **AH165-2J7E22A**<br>**AH165-2J7E33A** | |
| | Spring return | E | 2NO+2NC<br>3NO+3NC | **AH165-2J1E22A**<br>**AH165-2J1E33A** | |
| Key with square bezel AF87-222 | Mainteined | A | 2NO+2NC<br>3NO+3NC | **AH165-2YJ3A22A**<br>**AH165-2YJ3A33A** |   |
| | | E | 2NO+2NC<br>3NO+3NC | **AH165-2YJ3E22A**<br>**AH165-2YJ3E33A** | |
| | | D | 2NO+2NC<br>3NO+3NC | **AH165-2YJ3D22A**<br>**AH165-2YJ3D33A** | |
| | | C | 2NO+2NC<br>3NO+3NC | **AH165-2YJ3C22A**<br>**AH165-2YJ3C33A** | |
| | Spring/ manual return | E | 2NO+2NC<br>3NO+3NC | **AH165-2YJ6E22A**<br>**AH165-2YJ6E33A** | |
| | | D | 2NO+2NC<br>3NO+3NC | **AH165-2YJ6D22A**<br>**AH165-2YJ6D33A** | |
| | Spring/ manual return | A | 2NO+2NC<br>3NO+3NC | **AH165-2YJ7A22A**<br>**AH165-2YJ7A33A** | |
| | | E | 2NO+2NC<br>3NO+3NC | **AH165-2YJ7E22A**<br>**AH165-2YJ7E33A** | |
| | Spring return | E | 2NO+2NC<br>3NO+3NC | **AH165-2YJ1E22A**<br>**AH165-2YJ1E33A** | |

• The Key can be removed at the following positions:

A: B: C: D: E: F: G:

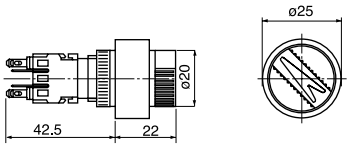
For spring-return selector switches, the key can be removed only at position E.
For manual/spring-return selector switches, the key can be removed at positions D, E and F for type J6, and position A, E and G for type J7.
• There are 6 available key types; A, B, C, D, E and F.
Standard key code is A.
• With wire-wrap pin terminals have a depth of 47mm.

• **Contact arrangement and operator positions:**

| Contact arrangement | | 2NO+2NC | 3NO+3NC |
|---|---|---|---|
| Operator position | Left | 1 U 2 1 L 2<br>3 4 3 4 | 1 U 2 1 M 2 1 L 2<br>3 4 3 4 3 4 |
| | Center | 1 2 1 2<br>3 4 3 4 | 1 2 1 2 1 2<br>3 4 3 4 3 4 |
| | Right | 1 2 1 2<br>3 4 3 4 | 1 2 1 2 1 2<br>3 4 3 4 3 4 |

U: Upper contact block M: Middle contact block L: Lower contact block
• Contact block positions: *See page 161*

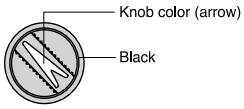
## ■ Illuminated selector switches

| Operator | Operation | Lamp voltage | No. of positions | Contact | Type | Dimensions, mm |
|---|---|---|---|---|---|---|
| Knob AF90-607 | Maintained | Flat LED 24V DC | 2 | 1NO+1NC | **AH165-2PL2□11E3** |   |
| | | | | 2NO+2NC | **AH165-2PL2□22E3** | |
| | | | 3 | 2NO+2NC | **AH165-2PL3□22E3** | |
| | | Incandescent 24V AC/DC | 2 | 1NO+1NC | **AH165-2PL2□11E** | |
| | | | | 2NO+2NC | **AH165-2PL2□22E** | |
| | | | 3 | 2NO+2NC | **AH165-2PL3□22E** | |
| | | Neon 110V AC | 2 | 1NO+1NC | **AH165-2PL2□11H1** | |
| | | | | 2NO+2NC | **AH165-2PL2□22H1** | |
| | | | 3 | 2NO+2NC | **AH165-2PL3□22H1** | |
| | | Neon 220V AC | 2 | 1NO+2NC | **AH165-2PL2□11M1** | |
| | | | | 2NO+2NC | **AH165-2PL2□22M1** | |
| | | | 3 | 2NO+2NC | **AH165-2PL3□22M1** | |

**• Knob color (arrow)**

Replace the □ mark by the following color code

| Color | Green | Red | White | Blue | Yellow | Orange |
|---|---|---|---|---|---|---|
| Code | G | R | W | S | Y | O |

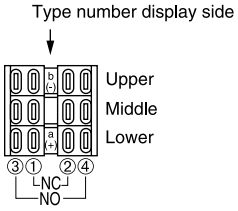



**• Lamp voltage**

Voltages other than above are available

| Code | LED | Incandescent | Neon |
|---|---|---|---|
| AA | 5V DC | – | – |
| A | 6V DC | 5V AC/DC | – |
| B | 12V DC | 12V AC/DC | – |
| K | – | – | 120V AC |
| P | – | – | 240V AC |

**• Terminal number and contact block position**




Contact arrangement (terminal No.: common)
1NO+1NC: Middle
2NO+2NC: Upper, lower

**• Contact arrangement and operator positions:**

2-position

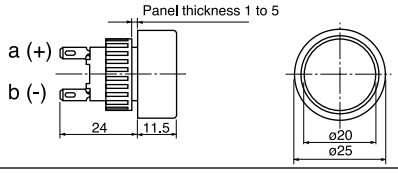
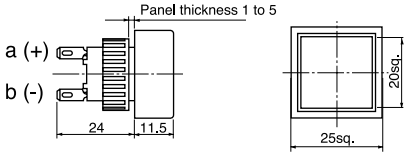
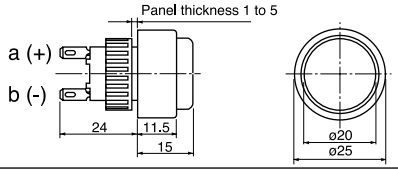
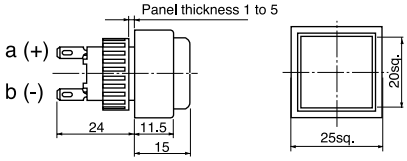
| Contact arrangement | | 1NO+1NC | 2NO+2NC |
|---|---|---|---|
| Operator position | Left | M 1 2 3 4 | U 1 2 3 4<br>L 1 2 3 4 |
| | Right | M 1 2 3 4 | U 1 2 3 4<br>L 1 2 3 4 |

3-position

| Contact arrangement | | 2NO+2NC |
|---|---|---|
| Operator position | Left | U 1 2 3 4<br>L 1 2 3 4 |
| | Center | U 1 2 3 4<br>L 1 2 3 4 |
| | Right | U 1 2 3 4<br>L 1 2 3 4 |

U: Upper contact block
M: Middle contact block
L: Lower contact block

## ■ Pilot lights

| Lens | Lamp | Voltage | Type | Dimensions, mm |
|---|---|---|---|---|
| Flush round AF87-213 | Flat LED | 24V DC | **AH165-2Z□E3** |   |
| | Incandescent | 24V AC/DC | **AH165-2Z□E** | |
| | Neon | 110V AC | **AH165-2Z□H1** | |
| | | 220V AC | **AH165-2Z□M1** | |
| Flush square AF87-205 | Flat LED | 24V DC | **AH165-2SZ□E3** |   |
| | Incandescent | 24V AC/DC | **AH165-2SZ□E** | |
| | Neon | 110V AC | **AH165-2SZ□H1** | |
| | | 220V AC | **AH165-2SZ□M1** | |
| Extended round AF87-212 | Flat LED | 24V DC | **AH165-2ZE□E3** |   |
| | Incandescent | 24V AC/DC | **AH165-2ZE□E** | |
| | Neon | 110V AC | **AH165-2ZE□H1** | |
| | | 220V AC | **AH165-2ZE□M1** | |
| Extended square AF87-204 | Flat LED | 24V DC | **AH165-2SZE□E3** |   |
| | Incandescent | 24V AC/DC | **AH165-2SZE□E** | |
| | Neon | 110V AC | **AH165-2SZE□H1** | |
| | | 220V AC | **AH165-2SZE□M1** | |

• **Lens color**
Replace the □ mark by the following lens color code

| Color | Green | Red | White | Yellow | Blue | Orange |
|---|---|---|---|---|---|---|
| Code | G | R | W | Y | S | O |

• **Lamp voltage**
Voltage other than above is available

| Code | LED | Incandescent | Neon |
|---|---|---|---|
| AA | 5V DC | – | – |
| A | 6V DC | 5V AC/DC | – |
| B | 12V DC | 12V AC/DC | – |
| K | – | – | 120V AC |
| P | – | – | 240V AC |

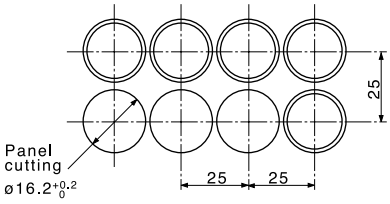
• The color lens is made of a tinted transparent material.
• A white lens is fitted with a transparent color lens.
• With wire-wrap pin terminals have a depth of 29mm.

# AH165-2
# Mounting space

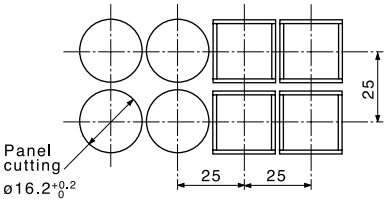
## ■ Mounting space, mm

**・Illuminated pushbuttons, pushbuttons, selector switches, illuminated selector switches and pilot lights**

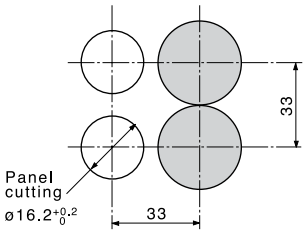
**Round head**



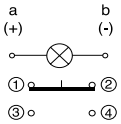
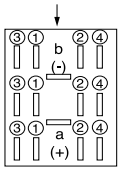
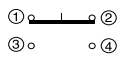
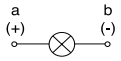

**Square head**




**Mushroom head**
**Push-lock, turn-reset**



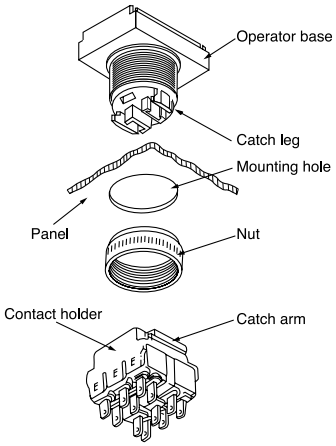

## ■ Terminal number

| Type | Wiring | Terminal position |
|---|---|---|
| Illuminated pushbuttons, Illuminated selector switches |   | Type number display side   |
| Pushbuttons Selector swiches |   | |
| Pilot lights (without transformer) |   | Type number display side |

## Notes on use

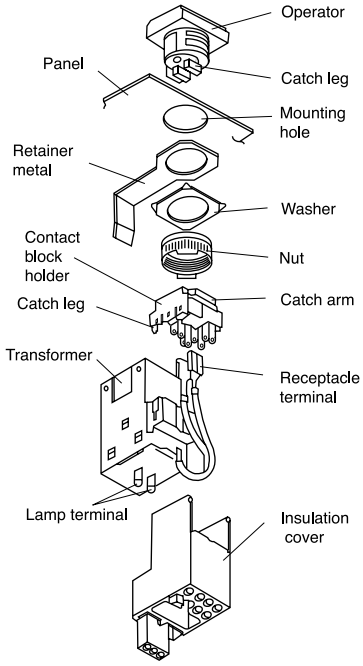
### ■ Installation on panel

- For installation, use dedicated wrench AHX601. The appropriate tightening torque is 0.6 to 1N·cm.
- The installation sequence is as follows:
  Pass the operator base through the hole in the panel and secure it by tightening the bezel. Properly position the catch arms of the contact holder and the catch legs of the operator base and push the contact holder onto the operator base. To remove the contact holder, pull it while pressing the catch arms inward.




### ■ Mounting steps of switch with transformer

①Pass the switch operator through the panel hole and secure with a nut by way of the retainer metal from the front of the panel.
②Align the position of the catch arm of the contact block holder with that of the catch leg of the switch operator. Engage these two catches by pushing them together.
③Insert and secure the transformer unit while assembling the contact block holder with the retainer metal.
④Connect the receptacle terminal with lead wires extending from the transformer to the lamp terminal of the contact block holder. (Be care on the polarity of the LED. Red: +, Black: –)
⑤Push in and secure the standard accessory insulation cover by aligning its position with each terminal. To replace the transformer, remove the transformer by widening the catch leg of the contact block holder. Pay attention not to excessively widen the catch leg. Mounting steps are the same as the above steps ③, ④, and ⑤.




### ■ Installing the protection cover / dust-tight cover, guard-ring

Be careful that the panel thickness does not exceed the following:
Panel thickness
Protection cover: 2.6mm max.
Dust-tight cover: 2.0mm max.
Guard ring: 2.5mm max.

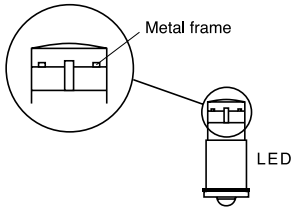
### ■ Operating voltage and rated voltage of incandescent lamps

| Rated voltage | Operating voltage |
|---|---|
| 6V | 4 to 5V |
| 14V | 10 to 12V |
| 28V (Standard) | 20 to 24V |

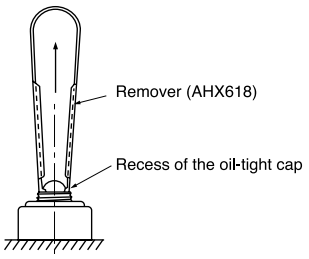
Incandescent lamps should be operated at the operating voltages if a lamp service life of 5,000 to 10,000 hours are needed. The ambient temperature must not exceed 30°C if the lamp is used at the rated voltage continuously.

### ■ Method of replacing lamp

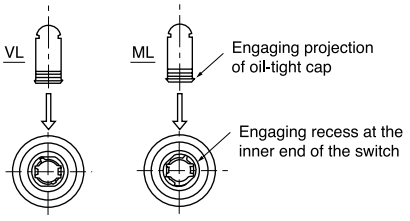
- Incandescent lamps/LED lamps/neon lamps
  Remove the color lens and inner button with a remover AHX618.
  Then draw out the lamp with a lamp changer AHX672.
  When installing lamps, do it manually and in the reverse order of removing.
- Products with blue and green LEDs
  The LED devices on products with high-brightness (blue and green) LEDs are very sensitive to static electricity. When replacing LED lamps do not allow static electricity to come into direct contact with the metal frame on the upper side of the LED lamp. The LED device may be damaged if this part is subjected to static electricity. When installing or removing an LED lamp, it is recommended that you use the lamp changer (AHX672).




- To replace the lamp of a AH165-2 illuminated pushbutton switch (ML,VL), remove the button and draw out the oil-tight cap.



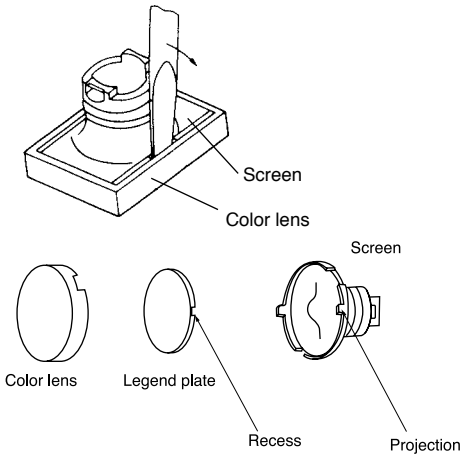

- Then, replace the lamp using a lamp changer (AHX672) and push the oil-tight cap into its original position with its engaging projection properly adjusted (see the figure below).



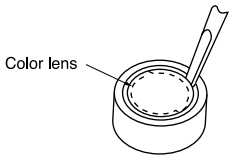

Note: Lamp of AH165-ZM type can not be replaced.

### ■ Method of replacing color lens

• To remove the color lens , insert a small screwdriver into the color lens and twist in direction of the arrow.




• For an AH165-2, use a small standard screwdriver or a similar tool with a flat end. If one side of the color lens is removed from the screen, insert the screwdriver or a similar tool deeper and remove the color lens together with the screen.




### ■ Replacing pushbuttons

In the case of alternative action type pushbutton switches and illuminated pushbutton switches, be sure not to replace the pushbuttons in their locked state. This could result in internal damage to the mechanism.

### ■ Description sheet

The Fuji description sheet is 25$\mu$m thick. If preparing custom description sheets, make sure that the thickness is 0.1mm or less.

### ■ Contact block

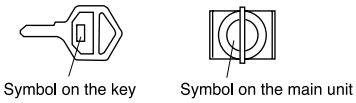
To replace a contact block, use removing tool AGX012. If excessive force is applied when attempting to open the support legs for the contact block holder, deformation or damage may occur.

### ■ Handling precautions

• Do not apply torque in excess of 1.0 N•m to operate the selectors switch (Type “P”). Required operating force of switches is less than 0.1 N•m.
• Do not tap on a pushbutton to turn it ON or OFF, such handling may damage it. Be sure to operate the pushbutton by hand.

### ■ Key type selector switch

• Five key types (Type B to Type F) are available besides Type A, which is the standard key type. Be sure to use a key with a symbol which is matched with the symbol on the main unit.




• Fully insert the key into the main unit before turning the key.
• The key turning force should not exceed 0.1 N•m.
• Do not pull out or insert the key forcibly.

### ■ Wiring connections

• Use a soldering iron with a wattage of not more than 30W and a tip length of more than 20mm.
Use a rosin-core solder
With a 30W iron complete soldering within 5 seconds, or 10 seconds with a 20W iron. Do not apply external force to the terminals. Do not deform the terminals.
Because lead-free solder's melting point is slightly high, soldering work may be difficult. Use a soldering iron whose tip is rather large or whose calorie is rather high.
• Wires that can be connected
Two solid wires with a maximum diameter of 0.8mm (solder)
One stranded wire with a maximum area of 0.75mm$^2$ (solder)
Flat connection terminal
(2.8□-1.25-5) 0.5 to 1.25mm$^2$
(2.8□-0.5-5) 0.2 to 0.5mm$^2$
• Using contact blocks
When using NO and NC contacts in the same contact block, avoid connection that involves opposite polarity or wiring from different types of power supply.
• For wiring to adjacent terminals, use insulated tubing to prevent short-circuit and to assure isolation. For solder terminals, be careful when connecting thick wires. Do not use too much solder.
• Wiring to wire-wrap pin terminals
Select the appropriate wire sizes and tools from the table below.

| Wire size | Bit | Sleeve | Number of effective wraps |
|---|---|---|---|
| 0.4mm dia. | 3-A | 1-B | About 8 |
| 0.5mm dia. | 1-A | 1-B | About 6 |
| (0.65mm dia.) | (2-A) | (2-B) | (About 6) |

Use ordinary wrapping for connection.
Wires of 0.65mm dia. must not be used on adjacent terminals. However, 0.65mm dia. wire can be mixed with 0.4 and 0.5mm dia. wires.
• Wiring to tab terminals
Use receptacles, No. 110.

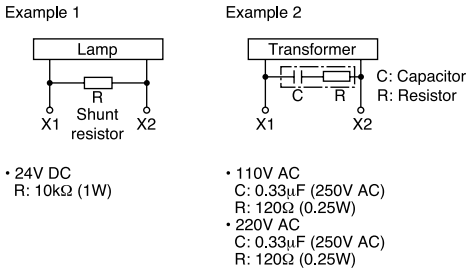
### ■ Installing lamps in close order

When continuously lighting pilot lights or pressing illuminated pushbuttons installed in close order, care must be taken that the ambient temperature does not exceed the rated value.

### ■ LEDs

• LED Lamp Malfunctioning
The LED lamp is lit by a very small level of current (approximately 0.01mA). Therefore, the it may be erroneously lit by a current leaking from the surge absorption circuit or semiconductor circuit or due to stray capacitance between cables. In that case, provide a countermeasure (e.g., connect a resistor in parallel with the LED lamp).

• Countermeasure for Malfunctioning
Shunt Resistor R or CR elements connected in parallel
Lamp malfunctions can be prevented by connecting a shunt resistor (R) or CR elements (a capacitor and resistor) in parallel with the LED lamp terminal. The resistance and CR values vary depending on the model and the operating conditions.




• Incoming surge
Be careful that since high luminance LED products use an element sensitive to static electricity, they may not be lit by an abnormal voltage like surge.

### ■ Using a flat LED in 48V DC circuit

When a flat LED lamps having a rated voltage of 24V DC is used with 48V DC circuit, connect an external resistor of 1,800Ω (2W).

### ■ Preventing the neon lamp from incorrectly turning ON

The neon lamp may incorrectly turn ON due to current leakage or voltage induction. In such a case, connect a shunt resistor in parallel with the lamp.
Example) 110V AC: 100kΩ (0.25W)
220V AC: 50kΩ (2W)

If an external surge of 3kV or more may occur, connect a surge absorption element in parallel with the lamp.

### ■ Numerical indicators

To ensure high reliability and long life for the LED, design the circuit not to exceed the maximum ratings under any operating conditions.
• Keep in mind that the display may malfunction or be damaged due to noise in input signals. (TC type)
• Wire the TC type as shown on the nameplate. The IC may break if the supply voltage is connected in reverse.
• Keep in mind that the correct display will not appear with negative logic input because the TC type accepts positive logic input.

### ■ Operation

Do not use a hitting or bouncing action to operate the button, or the switch may break. Always operate the switch by hand.

### ■ Storage and operation site

• Use the unit within the rated operating ambient temperature and humidity ranges.
• Do not use the enclosed type in places where oil or water is sprayed or where dust accumulates. In places such as these, use the oil-tight type or provide a dust cover.
• The oil-tight type is evaluated with standard cutting oil and cooling oil applied. The oil-tight type cannot be used with some special oils.

### ■ Buzzer

• Noise
If the application circuit is likely to generate excessively strong noise, connect a surge absorber (e.,g., FUJI'S ENC390D, provided that the switch is a 24V type) in parallel with the buzzer.
• Place of Use
The buzzer does not have a drip-proof construction. Do not use the buzzer in places where oil or water is sprayed or where dust accumulates. If the buzzer is a splash-proof type, it will resist sprays of water.
• Do not use the buzzer in places that are subject to an excessive amount of corronsive gas.
• Be careful that the buzzer is likely to sound erroneously due to leakage current or the like.

## ■ Accessories for AH164 and AH165

| Description | | Type | |
|---|---|---|---|
| Color chips (Round) | | Color | Type |
| | L, L5, E<br>E5, Z | Green | **AHX631-G** |
| | | Red | **AHX631-R** |
| | | White (For Neon) | **AHX631-W** |
| | | Blue | **AHX631-S** |
| | | Yellow | **AHX631-Y** |
| | | Orange | **AHX631-O** |
| | | Clear | **AHX631-C** |
| SF-682 | For LED, Neon | Green | **AHX653-G** |
| Color chips (Square) | | Color | Type |
| | SL, SL5, SGL,<br>SGL5, SF, SF5,<br>SGF, SGF5, ZS | Green | **AHX632-G** |
| | | Red | **AHX632-R** |
| | | White (For Neon) | **AHX632-W** |
| | | Blue | **AHX632-S** |
| | | Yellow | **AHX632-Y** |
| | | Orange | **AHX632-O** |
| | | Clear | **AHX632-C** |
| SF-681 | For LED, Neon | Green | **AHX653-SG** |
| Color chips (Rectangular) | | Color | Type |
| | TL, TL5, TGL<br>TGL5, TF, TF5<br>TGF, TGF5, ZT | Green | **AHX633-G** |
| | | Red | **AHX633-R** |
| | | White (For Neon) | **AHX633-W** |
| | | Blue | **AHX633-S** |
| | | Yellow | **AHX633-Y** |
| | | Orange | **AHX633-O** |
| | | Clear | **AHX633-C** |
| SF-680 | For LED, Neon | Green | **AHX653-TG** |
| Mushroom head button | | Color | Type |
| | M, M5 | Green | **AHX682-G** |
| | | Red | **AHX682-R** |
| | | White | **AHX682-W** |
| | | Blue | **AHX682-S** |
| | | Yellow | **AHX682-Y** |
| | | Orange | **AHX682-O** |
| SI-40 | | Black | **AHX682-B** |
| Convex square head button | | Color | Type |
| | SM, SM5 | Green | **AHX683-G** |
| | | Red | **AHX683-R** |
| | | White | **AHX683-W** |
| | | Blue | **AHX683-S** |
| | | Yellow | **AHX683-Y** |
| | | Orange | **AHX683-O** |
| SI-43 | | Black | **AHX683-B** |
| Convex rectangular head button | | Color | Type |
| | TM, TM5 | Green | **AHX684-G** |
| | | Red | **AHX684-R** |
| | | White | **AHX684-W** |
| | | Blue | **AHX684-S** |
| | | Yellow | **AHX684-Y** |
| | | Orange | **AHX684-O** |
| SI-44 | | Black | **AHX684-B** |

| Description | Type |
|---|---|
| Legend sheet<br>SH-165 | Round<br>Type: **AHX615-□**<br>Legend: ON, OFF, UP, DOWN<br><br>Square<br>Type: **AHX616-□**<br>Legend: ON, OFF, UP, DOWN<br>START, STOP, OPEN<br>CLOSE, AUTO, MAN,<br>RESET, POWER, REV,<br>FWD, HIGH, LOW<br><br>Rectangular<br>Type: **AHX617-□**<br>Legend: ON, OFF, UP, DOWN<br>START, STOP, AUTO,<br>MAN, FOWARD, REVERSE<br><br>When ordering, specify desired legend in the □ at the end of ordering code, Transparent blank sheets are also available.<br>Use black oil ink. |

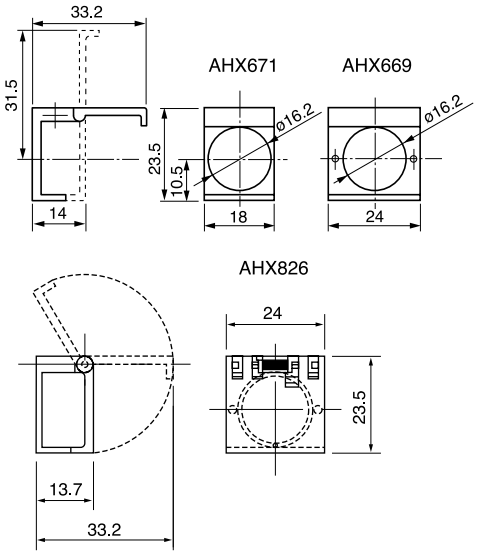
| Legend plate (Acrylic resin) | | Type | Color | Dimensions, mm |
|---|---|---|---|---|
| | Round | **AHX665** | White | ø12.2 x 0.9 |
| | | **AHX665-C** | Transparent | |
| | | **AHX665-B** | Black | |
| | Square | **AHX666** | White | 12.2sq. x 0.9 |
| | | **AHX666-C** | Transparent | |
| | | **AHX666-B** | Black | |
| SH-164 | Rectangular | **AHX667** | White | 12.2 x 18.2 x 0.9 |
| | | **AHX667-C** | Transparent | |
| | | **AHX667-B** | Black | |

| Legend plate for spot LED (Acrylic resin) | | Type | Dimensions, mm |
|---|---|---|---|
| | Round | **AHX650** | ø12.2 x 0.9 |
| | Square | **AHX651** | 12.2sq. x 0.9 |
| SP-113 | Rectangular | **AHX652** | 12.2 x 18.2 x 0.9 |

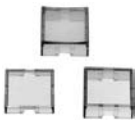
| Legend plate for selector switch (2-position) | |
|---|---|
| SH-226A | Type: **AHX664**<br>Legend: ON-OFF<br>Legend: Blank<br><br>Dimensions, mm: 24sq. x 0.5 |

| Legend plate for symbol mark | | Mark | Type |
|---|---|---|---|
| | Square | ◯ | **AHX666-E** |
| | Rectangular | | **AHX667-E** |
| | Square | I | **AHX666-H** |
| | Rectangular | | **AHX667-H** |
| | Square | Ⓣ | **AHX666-T** |
| AF87-74 | Rectangular | | **AHX667-T** |

# AH164 and AH165
# Accessories

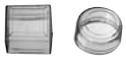
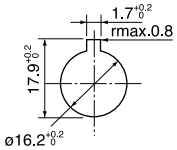
| Description | Type |
|---|---|
| Protection cover<br> <br>SM-378 | For round and square head button<br>Type: **AHX671**<br><br>For rectangular head button<br>Type: **AHX669**<br>**AHX826**<br><br>This cover protect against accidental operation.<br>Note: Not used for illuminated pushbuttons with guard. Applicable panel thickness is 2.6mm max.<br><br>Dimensions, mm<br>  <br> |
| Dust-tight cover<br> <br>AF91-123, SI-41 | For round and square head button<br>Type: **AHX822**<br>Dimensions, mm: 24sq. x 14.2<br><br>For rectangular head button<br>Type: **AHX668**<br>Dimensions, mm: 24 x 30 x 14.2<br><br>For mushroom head button<br>Type: **AHX649**<br>Dimensions, mm: ø30 x 18<br><br>These covers protect against dust.<br>Note: Applicable panel thickness is 2.0mm max. |
| Guard ring<br> <br>SI-42 | Type / Color / Dimensions, mm<br><br>**AHX676-B** / Black / ø21 x 12<br>**AHX676-GY** / Gray<br><br>This guard ring is used in combination with an extended round head pushbutton (L or E).<br><br>Note: Applicable panel thickness is 2.5mm max. Please place an order for a packing (AHX685) separately when you intend to use for AH165 series. |
| Transformer<br> <br>AF90-949 | Voltage / Type / Lamp<br><br>100 to 110V AC / **AHX805-H** / LED<br>200 to 220V AC / **AHX805-M**<br><br>100 to 110V AC / **AHX806-H** / Incandescent<br>200 to 220V AC / **AHX806-M** |

## ■ Accessories for AH165-2

| Description | Type |
|---|---|
| Color lens (Round)<br> <br>AF87-631 | For flush head<br>(Used with 2F, 2F5, 2FL, 2FL5, 2Z)<br>Color / Type<br>Green **AHX2604-G**<br>Red **AHX2604-R**<br>Yellow **AHX2604-Y**<br>Blue **AHX2604-S**<br>Orange **AHX2604-O**<br>Clear **AHX2604-C**<br><br>For extended head<br>(Used with 2E, 2E5, 2EL, 2EL5, 2ZE)<br>Color / Type<br>Green **AHX2605-G**<br>Red **AHX2605-R**<br>Yellow **AHX2605-Y**<br>Blue **AHX2605-S**<br>Orange **AHX2605-O**<br>Clear **AHX2605-C** |
| Color lens (Square)<br>  <br>AF87-632 | For flush head<br>(Used with 2SF, 2SF5, 2SFL, 2SFL5, 2SZ)<br>Color / Type<br>Green **AHX2606-G**<br>Red **AHX2606-R**<br>Yellow **AHX2606-Y**<br>Blue **AHX2606-S**<br>Orange **AHX2606-O**<br>Clear **AHX2606-C**<br><br>For extended head<br>(Used with 2SE, 2SE5, 2SEL, 2SEL5, 2SZE)<br>Color / Type<br>Green **AHX2607-G**<br>Red **AHX2607-R**<br>Yellow **AHX2607-Y**<br>Blue **AHX2607-S**<br>Orange **AHX2607-O**<br>Clear **AHX2607-C**<br><br>For concave head<br>(Used with 2SCE, 2SCE5, 2SCL, 2SCL5)<br>Color / Type<br>Green **AHX2608-G**<br>Red **AHX2608-R**<br>Yellow **AHX2608-Y**<br>Blue **AHX2608-S**<br>Orange **AHX2608-O**<br>Clear **AHX2608-C** |

| Description | Type |
|---|---|
| Legend plate<br> <br>AF87-631<br>AF87-630 | For flush head<br>Color / Type / Used with<br>White **AHX2609-W** Incandescent lamp, LED lamp, Pushbutton *1<br>Clear **AHX2609-C** Neon lamp *2<br>Black **AHX2609-B** Pushbutton *3<br>Dimensions, mm: ø18*4 x 0.9<br><br>For extended head<br>Color / Type / Used with<br>White **AHX2610-W** Incandescent lamp, LED lamp, Pushbutton *1<br>Clear **AHX2610-C** Neon lamp *2<br>Black **AHX2610-B** Pushbutton *3<br>Dimensions, mm: ø18*4 x 4.4<br><br>For flush square<br>Color / Type / Used with<br>White **AHX2611-W** Incandescent lamp, LED lamp, Pushbutton *1<br>Clear **AHX2611-C** Neon lamp *2<br>Black **AHX2611-B** Pushbutton *3<br>Dimensions, mm: 17sq. x 0.9<br><br>For extended square, concave square<br>Color / Type / Used with<br>White **AHX2612-W** Incandescent lamp, LED lamp, Pushbutton *1<br>Clear **AHX2612-C** Neon lamp *2<br>Black **AHX2612-B** Pushbutton *3<br>Dimensions, mm: 17sq. x 4.4<br><br>*1 Illuminated pushbutton switches and pilot lights with incandescent lamps or LED lamps, Pushbutton switches (excluding).<br>*2 Illuminated pushbutton switches and pilot lights with neon lamps.<br>*3 Pushbutton switches (black)<br>*4 Engraved range: 17mm dia. |
| Mushroom head button<br> <br>AF87-633 | For illuminated pushbuttons<br>(Used with 2ML, 2YML)<br>Color / Type<br>Green **AHX2614-G**<br>Red **AHX2614-R**<br>White **AHX2614-W**<br>Yellow **AHX2614-Y**<br>Blue **AHX2614-S**<br>Orange **AHX2614-O**<br><br>For non-illuminated pushbuttons<br>(Used with 2M, 2YM)<br>Color / Type<br>Green **AHX2613-G**<br>Red **AHX2613-R**<br>White **AHX2613-W**<br>Yellow **AHX2613-Y**<br>Blue **AHX2613-S**<br>Orange **AHX2613-O**<br>Black **AHX2613-B** |

# AH165-2
# Accessories

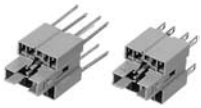
| Description | Type |
|---|---|
| Push-lock, turn-reset button<br> <br>AF87-634 | For illuminated pushbuttons<br>(Used with 2VL, 2YVL)<br>Color — Type<br>Green — **AHX2616-G**<br>Red — **AHX2616-R**<br>White — **AHX2616-W**<br>Yellow — **AHX2616-Y**<br><br>For pushbuttons<br>(Used with 2V, 2YV)<br>Color — Type<br>Green — **AHX2615-G**<br>Red — **AHX2615-R**<br>Yellow — **AHX2615-Y**<br>Black — **AHX2615-B** |
| Dust-tight cover<br>  <br>AF87-636 | For flush round<br>(Used with 2F, 2FL, 2F5, 2FL5)<br>Type: **AHX2603-2**<br><br>For flush square<br>(Used with 2SF, 2SFL, 2SF5, 2SFL5)<br>Type: **AHX2603-2S**<br>These covers protect against dust. |
| Key washer<br> <br>AF87-635 | Type: **AHX2601**<br>Mounting hole, mm<br>  <br> |

## ■ Accessories for AH164, AH165 and AH165-2

| Description | Type |
|---|---|
| Incandescent lamp<br> <br>SD-924 | Voltage / Type<br>6V, 0.6W **AHX641**<br>14V, 0.7W **AHX642**<br>28V, 0.7W **AHX643** |
| LED lamp<br> <br>AF02-116 | Voltage / Type<br>5V DC **AHX695-5** □<br>6V DC **AHX695-6** □<br>12V DC **AHX695-12** □<br>24V DC **AHX695-24** □<br>Replace the □ mark by the luminous color code<br>Red (R), Green (G), Orange (O), Amber (A), Yellow (Y), Blue (S) |
| Neon lamp<br> <br>SP-119 | Voltage / Type / Luminous color<br>110V AC **AHX655-H** Green<br>**AHX654-H** Orange<br>120V AC **AHX655-K** Green<br>**AHX654-K** Orange<br>220V AC **AHX655-M** Green<br>**AHX654-M** Orange<br>240V AC **AHX655-P** Green<br>**AHX654-P** Orange |
| Panel plug<br> <br>SI-186 | Color / Type<br>Round: Black **AHX622-B** IP40; Gray **AHX622-GY** IP40<br>Square: Black **AHX644-B** IP40; Gray **AHX644-GY** IP40<br>Rectangular: Black **AHX645-B** IP40; Gray **AHX645-GY** IP40; Black **AHX850-B** IP65 |
| Lamp changer<br> <br>AF02-117 | Type: **AHX672**<br>If the switch is fitted with a lamp, use this tool to remove the lamp. The tool is unnecessary when installing a lamp. |
| Remover<br> <br>SE-34 | Type: **AHX618**<br>This tool is used for replacing the color chips or screens. |
| Contact holder remover<br> <br>SP-522 | Type: **AHX699**<br>This tool is used to remove a contact holder when switches are densely installed. |

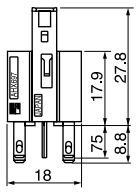
| Description | Type |
|---|---|
| Wrench<br> <br>SE-741 | Type: **AHX601**<br>When installing a command switch on a panel, this tool is useful for tightening the switch firmly and efficiently. |
| Terminal cover<br> <br>AF87-637 | Type: **AHX2602**<br>This cover is used with AH164 and AH165 and AH165-2 (except pilot lights). Pass the wires through the cover, then mount the cover in position. |
| Contact block<br> <br>SK-1140 | Terminal / Type<br>Solder/Tab **AGX001**<br>Wire-wrap **AGX001–W** |
| Dummy unit<br> <br>SK-1141 | Type: **AGX002**<br>A dummy unit is used to fill the space where no contact blocks are installed. For example, two dummy units are used if 1NO+1NC contact block is installed, and one dummy unit is used if 2NO+2NC contact blocks are installed. |
| Remover<br> <br>SM-334 | Type: **AGX012**<br>This tool is used for replacing the contact blocks or dummy units. |

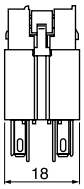
# AH164, AH165 and AH165-2 Accessories

| Description | Type | | |
|---|---|---|---|
| Sockets | Terminal | Type | Used with |
| SM-1097 | Solder/Tab | **AHX697-S** | Pushbuttons |
| | Wire-wrap | **AHX697-W** | |
| | PC board | **AHX697-P** | |
| | Solder/Tab | **AHX697-SL** | Illuminated pushbuttons |
| | Wire-wrap | **AHX697-WL** | |
| | PC board | **AHX697-PL** | |
| | Contact arrangement is 2NO+2NC only. Except for AH165-2PL types | | |
| Sockets for LED | Terminal | Type | |
|  SM-1098 | Solder/Tab | **AHX697-SH3** | |
| | Wire-wrap | **AHX697-WH3** | |
| | • Contact arrangement is 2NO+2NC only.<br>• These sockets are used only when LED lamps rated for 24V DC are used under 110V AC/DC.<br>• Except for AH164, 165 and 165-2 series pilot lights or AH165-2PL type.<br>• When side-by-side mounting and continuous lighting, note that a socket has higher temperature over the ambient temperature. | | |

Dimensions, mm

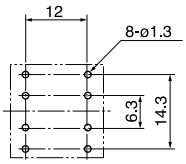
Solder/Tab



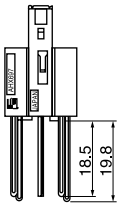




PC board mounting

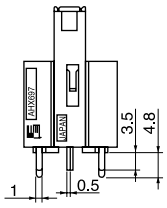
Pushbuttons



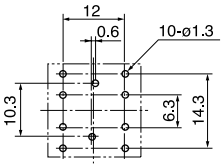

Wire-wrap

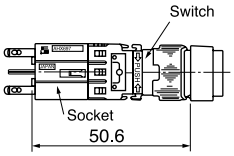



PC board




Illuminated pushbuttons




For wiring to wire-wrap pin terminals, select appropriate wire sizes and tool from the table below.

| Wire size | Bit | Sleeve | Number of effective wraps |
|---|---|---|---|
| 0.4mm dia. | 3-A | 1-B | About 8 |
| 0.5mm dia. | 1-A | 1-B | About 6 |
| (0.65mm dia.) | (2-A) | (2-B) | (About 6) |

Use ordinary wrapping for connection. Wires of 0.65mm dia. must not be used on adjacent terminals. However, 0.65mm dia. wire can be mixed with 0.4mm and 0.5mm dia. wires.

■ **Mass, gram**

**AH164 series**

| Type | 1NO + 1NC | 2NO + 2NC | 3NO + 3NC |
|---|---|---|---|
| AH164-L,L5 (Without transformer) | 12.5 | 13.5 | 14.5 |
| L,L5 (With transformer) | 53.5 | 54.5 | - |
| SL,SL5 (Without transformer) | 13.1 | 14.1 | 15.1 |
| SL,SL5 (With transformer) | 54.1 | 55.1 | - |
| TL,TL5 (Without transformer) | 13.9 | 14.9 | 15.9 |
| TL,TL5 (With transformer) | 54.9 | 55.9 | - |
| TGL,TGL5 (Without transformer) | 13.9 | 14.9 | 15.9 |
| TGL,TGL5 (With transformer) | 54.9 | 55.9 | - |
| SGL,SGL5 (Without transformer) | 13.1 | 14.1 | 15.1 |
| SGL,SGL5 (With transformer) | 54.1 | 55.1 | - |
| AH164-E,E5 | 10.5 | 11.5 | 12.5 |
| M,M5 | 12.5 | 13.5 | 14.5 |
| SF,SF5 | 11.1 | 12.1 | 13.1 |
| TF,TF5 | 11.9 | 12.9 | 13.9 |
| TGF,TGF5 | 11.9 | 12.9 | 13.9 |
| SGF,SGF5 | 11.1 | 12.1 | 13.1 |
| SM,SM5 | 13.4 | 14.4 | 15.4 |
| TM,TM5 | 13.1 | 14.1 | 15.1 |
| AH164-P2,P0 | 16.4 | 17.4 | 18.4 |
| P3,P6,P7,P1 | - | 17.4 | 18.4 |
| PK3,PK6,PK7,PK1 | - | 17.4 | 18.4 |
| SP2,SP0 | 15.8 | 16.8 | 17.8 |
| SP3,SP6,SP7,SP1 | - | 16.8 | 17.8 |
| SPK3,SPK6,SPK7,SPK1 | - | 16.8 | 17.8 |
| J2,J0 | 30.4 | 31.4 | 32.4 |
| J3,J6,J7,J1 | - | 31.6 | 32.6 |
| JK3,JK6,JK7,JK1 | - | 31.6 | 32.6 |
| SJ2,SJ0 | 29.8 | 30.8 | 31.8 |
| SJ3,SJ6,SJ7,SJ1 | - | 30.8 | 31.8 |
| SJK3,SJK6,SJK7,SJK1 | - | 30.8 | 31.8 |

| | |
|---|---|
| AH164-Z (Without transformer) | 6.9 |
| Z (With transformer) | 50.9 |
| ZS (Without transformer) | 7.5 |
| ZS (With transformer) | 51.5 |
| ZT (Without transformer) | 8.2 |
| ZT (With transformer) | 52.2 |
| AH164-TX | 16 |
| TX1 | 17.5 |
| TX2B | 13.2 |
| AH164-TS | 9.7 |
| TC | 15.6 |
| TC4□E- □K1 | 46.4 |
| TC4□E- □K | 52.8 |

**AH165 series**

| Type | 1NO + 1NC | 2NO + 2NC | 3NO + 3NC |
|---|---|---|---|
| AH165-L,L5 (Without transformer) | 12.5 | 13.5 | 14.5 |
| L,L5 (With transformer) | 53.5 | 54.5 | - |
| SL,SL5 (Without transformer) | 13.1 | 14.1 | 15.1 |
| SL,SL5 (With transformer) | 54.1 | 55.1 | - |
| TL,TL5 (Without transformer) | 13.9 | 14.9 | 15.9 |
| TL,TL5 (With transformer) | 54.9 | 55.9 | - |
| TGL,TGL5 (Without transformer) | 13.9 | 14.9 | 15.9 |
| TGL,TGL5 (With transformer) | 54.9 | 55.9 | - |
| SGL,SGL5 (Without transformer) | 13.1 | 14.1 | 15.1 |
| SGL,SGL5 (With transformer) | 54.1 | 55.1 | - |
| AH165-E,E5 | 10.5 | 11.5 | 12.5 |
| M,M5 | 12.5 | 13.5 | 14.5 |
| SF,SF5 | 11.1 | 12.1 | 13.1 |
| TF,TF5 | 11.9 | 12.9 | 13.9 |
| TGF,TGF5 | 11.9 | 12.9 | 13.9 |
| SGF,SGF5 | 11.1 | 12.1 | 13.1 |
| SM,SM5 | 13.4 | 14.4 | 15.4 |
| TM,TM5 | 13.1 | 14.1 | 15.1 |
| VR | 13.4 *1 | 14 *2 | - |
| V1R | 14.3 *1 | 14.9 *2 | - |
| AH165-V5R | 18 *1 | 18.6 *2 | - |
| V6R | 18.9 *1 | 19.5 *2 | - |
| AH165-P2,P0 | 16.7 | 17.7 | 18.7 |
| P3,P6,P7,P1 | - | 17.7 | 18.7 |
| PK3,PK6,PK7,PK1 | - | 18 | 19 |
| SP2,SP0 | 16.1 | 17.1 | 18.1 |
| SP3,SP6,SP7,SP1 | - | 17.1 | 18.1 |
| SPK3,SPK6,SPK7,SPK1 | - | 17.1 | 18.1 |
| J2,J0 | 31.1 | 32.1 | 33.1 |
| J3,J6,J7,J1 | - | 32.1 | 33.1 |
| JK3,JK6,JK7,JK1 | - | 32.1 | 33.1 |
| SJ2,SJ0 | 30.5 | 31.5 | 32.5 |
| SJ3,SJ6,SJ7,SJ1 | - | 31.5 | 32.5 |
| SJK3,SJK6,SJK7,SJK1 | - | 31.5 | 32.5 |
| AH165-JM2 | 30 | 34.4 | - |
| RJM2 | 29.6 | 34 | - |

| | |
|---|---|
| AH165-Z (Without transformer) | 6.9 |
| Z (With transformer) | 50.9 |
| ZS (Without transformer) | 7.5 |
| ZS (With transformer) | 51.5 |
| ZT (Without transformer) | 8.2 |
| ZT (With transformer) | 52.2 |
| ZM (Without transformer) | 5.4 |
| AH165-X | 13.6 |
| AH165-TS | 9.7 |
| TC | 15.6 |
| TC4□E-□K1 | 46.4 |
| TC4□E-□K | 52.8 |

Note: *1 For 1NC
*2 For 2NC

# AH164, AH165 and AH165-2
# Mass

■ **Mass, gram**
**AH165-2 series**

| Type | 1NO + 1NC | 2NO + 2NC | 3NO + 3NC |
|---|---|---|---|
| AH165-2FL,FL5 | 15.2 | 16.2 | 17.2 |
| 2EL,EL5 | 15.6 | 16.6 | 17.6 |
| 2ML | 18.7 | 19.7 | 20.7 |
| 2YML | 20.2 | 21.2 | 22.2 |
| 2SFL,SFL5 | 16.5 | 17.5 | 18.5 |
| 2SEL,SEL5 | 17.4 | 18.4 | 19.4 |
| 2SCL,SCL5 | 17.6 | 18.6 | 19.6 |
| 2VL | 19.9 | 20.9 | 21.9 |
| 2YVL | 21.4 | 22.4 | 23.4 |
| AH165-2F,F5 | 14.4 | 15.4 | 16.4 |
| 2E,E5 | 14.8 | 15.8 | 16.8 |
| 2M | 16.7 | 17.7 | 18.7 |
| 2YM | 18.2 | 19.2 | 20.2 |
| 2SF,SF5 | 14.5 | 15.5 | 16.5 |
| 2SE,SE5 | 15.4 | 16.4 | 17.4 |
| 2SCE,SCE5 | 15.6 | 16.6 | 17.6 |
| 2S2 | - | 19 | - |
| 2YS2 | - | 20.6 | - |
| 2V | 17.9 | 18.9 | 19.9 |
| 2YV | 19.4 | 20.4 | 21.4 |
| AH165-2P2,P0 | 17.1 | 18.1 | 19.1 |
| 2P3,P6,P7,P1 | - | 18.1 | 19.1 |
| 2YP2,YP0 | 18.7 | 19.7 | 20.7 |
| 2YP3,YP6,YP7,YP1 | - | 19.7 | 20.7 |
| 2J2,J0 | 40 | 41 | 42 |
| 2J3,J6,J7,J1 | - | 41 | 42 |
| 2YJ2 | 41.6 | 42.6 | 43.6 |
| 2YJ3,YJ6,YJ7,YJ1 | - | 42.6 | 43.6 |
| 2H | 14.3 | 15.3 | 16.3 |
| 2SH | 16.1 | 17.1 | 18.1 |
| AH165-2PL2 | 17.3 | 18.3 | - |
| 2PL3 | - | 18.3 | - |

| | |
|---|---|
| AH165-2Z | 9.7 |
| 2ZE | 10.1 |
| 2SZ | 10.9 |
| 2SZE | 11.4 |

| Discontinued | Replacement | | Discontinued | Replacement | |
|---|---|---|---|---|---|
| PART # | PART # | | PART # | PART # | TYPE |
| AH22-AA@……@ | AR22A5N-@@@@B | | AH30-SAA@……@ | AR30A5N-@@@@B | Joy stick |
| - | AR22A5H-@@@@B | | AH30-SAA@……@-S | AR30A5H-@@@@B | selector switch |
| AH22-ALA@……@ | AR22A6N-@@@@B | | AH30-SALA@……@ | AR30A6N-@@@@B | |
| - | AR22A6H-@@@@B | | AH30-SALA@……@-S | AR30A6H-@@@@B | |
| AH22-ALM@……@ | AR22A1N-@@@@B | | AH30-SALM@……@ | AR30A1N-@@@@B | |
| AH22-AM@……@ | AR22A0N-@@@@B | | AH30-SAM@……@ | AR30A0N-@@@@B | |
| - | AR22A0H-@@@@B | | AH30-SAM@……@-S | AR30A0H-@@@@B | |
| - | AR22A1H-@@@@B | | AH30-SALM@……@-S | AR30A1H-@@@@B | |
| - | AR22A2N-@@@@B | | - | AR30A2N-@@@@B | |
| - | AR22A2H-@@@@B | | - | AR30A2H-@@@@B | |
| - | AR22A7N-@@@@B | | - | AR30A7N-@@@@B | |
| - | AR22A7H-@@@@B | | - | AR30A7H-@@@@B | |
| - | - | | AH30-B1#@@ | AR30B0R-@@# | Giant |
| - | - | | AH30-B2#@@ | AR30B1R-@@# | head |
| - | - | | AH30-B3#@@ | AR30B2R-@@# | |
| - | - | | AH30-B4#@@ | AR30B3R-@@# | |
| - | - | | AH30-C@@% | - | Coin |
| - | - | | AH30-D@@% | - | Key |
| AH22/25-E#@@ | AR22E0R-@@# | | AH30-E#@@ | AR30E0R-@@# | Round |
| AH22/25-E5#@@ | AR22E5R-@@# | | AH30-E5#@@ | AR30E5R-@@# | extended |
| AH22-EL#@@*& | AR22E0L-@@*&# | | - | - | head |
| AH22-EL5#@@*& | AR22E5L-@@*&# | | - | - | |
| - | - | | AH30F#@@/ES | AR30FVR-@@# | E-stop |
| AH22/25-F#@@ | AR22F0R-@@# | | AH30-F#@@ | AR30F0R-@@# | Flush |
| AH22/25-F5#@@ | AR22F5R-@@# | | AH30-F5#@@ | AR30F5R-@@# | head |
| AH25-G#@@ | AR22G0R-@@# | | AH30-G#@@ | AR30G0R-@@# | w/guard |
| AH22/25-G1#@@ | AR22G3R-@@# | | AH30-G1#@@ | AR30G1R-@@# | |
| - | - | | AH30-G3#@@ | AR30GPR-@@# | Pin-lock |
| AH25-G5#@@ | - | | AH30-G5#@@ | - | w/guard |
| AH22/25-G6#@@ | AR22G8R-@@# | | AH30-G6#@@ | AR30G6R-@@# | |
| AH22-GL1#@@*& | AR22G4L-@@*&# | | - | - | w/guard |
| AH22-GL6#@@*& | AR22G9L-@@*&# | | - | - | |
| - | - | | AH30-H2@@ | AR30WR-2@@# | Selector |
| - | - | | AH30-H3@@ | AR30WR-3@@# | switch |
| AH22/25-J0A@@% | AR22JR-0A@@% | | AH30-J0A@@% | AR30JR-0A@@% | Key |
| AH22/25-J1E@@% | AR22JR-1E@@% | | AH30-J1E@@% | AR30JR-1E@@% | selector |
| AH22/25-J2$@@% | AR22JR-2$@@% | | AH30-J2$@@% | AR30JR-2$@@% | switch |
| AH22/25-J3$@@% | AR22JR-3$@@% | | AH30-J3$@@% | AR30JR-3$@@% | |
| AH22/25-J6$@@% | AR22JR-6$@@% | | AH30-J6$@@% | AR30JR-6$@@% | |
| AH22/25-J7$@@% | AR22JR-7$@@% | | AH30-J7$@@% | AR30JR-7$@@% | |
| AH22-JC1E@@@% | AR22JCR-1$@@@% | | AH30-JC$@@@% | AR30JCR-3$@@@% | |
| AH22-JC3$@@@% | AR22JCR-3$@@@% | | - | - | |
| AH22-JC6$@@@% | AR22JCR-6$@@@% | | - | - | |
| AH22-JC7$@@@% | AR22JCR-7$@@@% | | - | - | |
| - | - | | AH30-K2$@@ | - | |
| - | - | | AH30-K3$@@ | - | |

@: contacts arrangement
#: color of button or grove
*: lamp voltage
&: lamp type
$: draw-out position of key
%: type of key

# AH-series Pushbutton cross to AR-series Pushbutton

| Discontinued | Replacement | | Discontinued | Replacement | |
|---|---|---|---|---|---|
| PART # | PART # | | PART # | PART # | TYPE |
| AH25-L#@@*& | AR22E0L-@@*&# | | AH30-L#@@*& | AR30E0L-@@*&# | Extended |
| AH25-L2#@@*& | AR22G4L-@@*&# | | AH30-L2#@@*& | AR30G4L-@@*&# | w/guard |
| AH25-L3#@@*& | AR22G4L-@@*&# | | AH30-L3#@@*& | AR30G3L-@@*&# | |
| AH25-L4#@@*& | AR22G4L-@@*&# | | AH30-L4#@@*& | AR30G4L-@@*&# | |
| AH25-L5#@@*& | AR22E5L-@@*&# | | AH30-L5#@@*& | AR30E5L-@@*&# | Extended |
| AH25-L6#@@*& | AR22G9L-@@*&# | | AH30-L6#@@*& | AR30G9L-@@*&# | w/guard |
| AH25-L7#@@*& | AR22G9L-@@*&# | | AH30-L7#@@*& | AR30G8L-@@*&# | |
| AH22-M#@@ | AR22M0R-@@# | | AH30-M#@@ | AR30M0R-@@# | Mushroom |
| AH25-M#@@ | AR22M4R-@@# | | - | - | head |
| - | - | | AH30-M2#@@ | | |
| AH22-M2#@@ | AR22M3R-@@# | | AH30-M1#@@ | AR30M3R-@@# | |
| AH22-M5#@@ | AR22M5R-@@# | | AH30-M5#@@ | AR30M5R-@@# | |
| AH25-M5#@@ | AR22M5R-@@# | | - | - | |
| - | - | | AH30-M6#@@ | - | |
| AH22-M7#@@ | - | | AH30-M7#@@ | - | |
| AH22-ML#@@*& | AR22M0L-@@*&# | | - | - | |
| AH22-ML5#@@*& | AR22M5L-@@*&# | | - | - | |
| AH22-MS#@@ | AR22M4R-@@# | | AH30-MS#@@ | AR30M4R-@@# | |
| AH22-MS5#@@ | - | | AH30-MS5#@@ | - | |
| AH22-MSL#@@*& | AR22M4L-@@*&# | | - | - | |
| AH22-MSL5#@@*& | - | | - | - | |
| - | - | | AH30-NR@@ | AR30N0R-@@R | Turn-lock |
| AH22/25-P0#@@ | AR22PR-0@@# | | AH30-P0#@@ | AR30PR-0@@# | Selector |
| AH22/25-P1#@@ | AR22PR-1@@# | | AH30-P1#@@ | AR30PR-1@@# | switch |
| AH22/25-P2#@@ | AR22PR-2@@# | | AH30-P2#@@ | AR30PR-2@@# | |
| AH22/25-P3#@@ | AR22PR-3@@# | | AH30-P3#@@ | AR30PR-3@@# | |
| AH25-P5#@@ | AR22PR-6@@# | | - | - | |
| AH22-P6#@@ | AR22PR-6@@# | | AH30-P5#@@ | AR30PR-6@@# | |
| AH22-P7#@@ | AR22PR-7@@# | | AH30-P6#@@ | AR30PR-7@@# | |
| AH25-PC#@@@ | AR22PCR-3@@@# | | AH30-PC#@@ | AR30PCR-3@@@# | |
| AH22-PC1#@@@ | AR22PCR-1@@@# | | - | - | |
| AH22-PC3#@@@ | AR22PCR-3@@@# | | - | - | |
| AH22-PC4#@@@ | AR22PCR-4@@@# | | - | - | |
| AH22-PC5#@@@ | AR22PCR-5@@@# | | - | - | |
| AH22-PC6#@@@ | AR22PCR-6@@@# | | - | - | |
| AH22-PC7#@@@ | AR22PCR-7@@@# | | - | - | |
| AH22-PCL3#@@@*& | - | | - | - | |
| AH22-PCL4#@@@*& | - | | - | - | |
| AH22-PCL5#@@@*& | - | | - | - | |
| AH22/25-PL0#@@*& | AR22PL-0@@*&# | | AH30-PL0#@@*& | AR30PL-0@@*&# | |
| AH22-PL1#@@*& | - | | AH30-PL1#@@*& | - | |
| AH22/25-PL2#@@*& | AR22PL-2@@*&# | | AH30-PL2#@@*& | AR30PL-2@@*&# | |
| AH22-PL3#@@*& | AR22PL-3@@*&# | | AH30-PL3#@@*& | AR30PL-3@@*&# | |
| AH22-PL6#@@*& | AR22PL-6@@*&# | | AH30-PL6#@@*& | AR30PL-6@@*&# | |
| AH22-PL7#@@*& | AR22PL-7@@*&# | | AH30-PL7#@@*& | AR30PL-7@@*&# | |

@: contacts arrangement
#: color of button or grove
*: lamp voltage
&: lamp type
$: draw-out position of key
%: type of key

| Discontinued | Replacement | | Discontinued | Replacement | |
|---|---|---|---|---|---|
| PART # | PART # | | PART # | PART # | TYPE |
| AH22-PR0#@@ | AR22RR-0@@# | | - | - | Selector |
| AH22-PR1#@@ | AR22RR-1@@# | | - | - | switch |
| AH22-PR2#@@ | AR22RR-2@@# | | - | - | |
| AH22-PR3#@@ | AR22RR-3@@# | | - | - | |
| AH22-PR6#@@ | AR22RR-6@@# | | - | - | |
| AH22-PR7#@@ | AR22RR-7@@# | | - | - | |
| AH22-PRC1#@@@ | AR22RCR-1@@@# | | - | - | |
| AH22-PRC3#@@@ | AR22RCR-3@@@# | | - | - | |
| AH22-PRC4#@@@ | AR22RCR-4@@@# | | - | - | |
| AH22-PRC5#@@@ | AR22RCR-5@@@# | | - | - | |
| AH22-PRC6#@@@ | AR22RCR-6@@@# | | - | - | |
| AH22-PRC7#@@@ | AR22RCR-7@@@# | | - | - | |
| AH22/25-PW0#@@ | AR22WR-0@@# | | AH30-PW0#@@ | AR30WR-0@@# | |
| AH22/25-PW1#@@ | AR22WR-1@@# | | AH30-PW1#@@ | AR30WR-1@@# | |
| AH22/25-PW2#@@ | AR22WR-2@@# | | AH30-PW2#@@ | AR30WR-2@@# | |
| AH22/25-PW3#@@ | AR22WR-3@@# | | AH30-PW3#@@ | AR30WR-3@@# | |
| AH25-PW5#@@ | AR22WR-6@@# | | - | - | |
| AH22-PW6#@@ | AR22WR-6@@# | | AH30-PW5#@@ | AR30WR-6@@# | |
| AH22-PW7#@@ | AR22WR-7@@# | | - | AR30WR-7@@# | |
| AH22-PWC1#@@@ | AR22WCR-1@@@# | | - | - | |
| AH22-PWC3#@@@ | AR22WCR-3@@@# | | - | - | |
| AH22-PWC4#@@@ | AR22WCR-4@@@# | | - | - | |
| AH22-PWC5#@@@ | AR22WCR-5@@@# | | - | - | |
| AH22-PWC6#@@@ | AR22WCR-6@@@# | | - | - | |
| AH22-PWC7#@@@ | AR22WCR-7@@@# | | - | - | |
| - | - | | AH30-Q#11 | - | Push-pull |
| AH22-Q2#@@ | AR22Q2R-@@# | | AH30-Q2#@@ | AR30Q2R-@@# | |
| AH22-S1C4#*(-N) | DR22N1-(N)*# | | AH30-S1C4#*(-N) | DR30N1-(N)*# | Numerical |
| AH22-S2C4#*(-N) | DR22N2-(N)*# | | AH30-S2C4#*(-N) | DR30N2-(N)*# | indicator |
| AH22/25-S1#@@ | AR22S1R-22# | | AH30-S1#@@ | AR30S1R-22# | w/selector |
| AH22/25-S2#@@ | AR22S2R-@@# | | AH30-S2#@@ | AR30S2R-@@# | ring |
| AH22/25-S3#@@ | AR22S3R-@@# | | AH30-S3#@@ | AR30S3R-@@# | |
| AH22/25-S4#@@ | - | | AH30-S4#@@ | - | |
| AH22/25-S5#@@ | - | | AH30-S5#@@ | - | |
| AH22/25-S6#@@ | AR22S6R-@@# | | AH30-S6#@@ | AR30S6R-@@# | |
| AH22/25-SE#@@ | AR22E0S-@@# | | AH30-SE#@@ | (AR22 series+AR9Y003) | Extended |
| AH22/25-SE5#@@ | AR22E5S-@@# | | AH30-SE5#@@ | (AR22 series+AR9Y003) | head |
| AH22-SEL#@@*& | AR22E0M-@@*&# | | - | - | |
| AH22-SEL5#@@*& | AR22E5M-@@*&# | | - | - | |
| AH22/25-SF#@@ | AR22F0S-@@# | | AH30-SF#@@ | (AR22 series+AR9Y003) | Flush |
| AH22/25-SF5#@@ | AR22F5S-@@# | | AH30-SF5#@@ | (AR22 series+AR9Y003) | head |
| AH22-SFL#@@*& | AR22F0M-@@*&# | | - | - | |
| AH22-SFL5#@@*& | AR22F5M-@@*&# | | - | - | |
| AH25-SJ2#@@ | AR22JY-2$@@% | | AH30-SJ2#@@ | (AR22 series+AR9Y003) | Selector |
| AH25-SJ3#@@ | AR22JY-3$@@% | | AH30-SJ3#@@ | (AR22 series+AR9Y003) | switch |
| AH25-SL#@@*& | AR22E0M-@@*&# | | AH30-SL#@@*& | (AR22 series+AR9Y003) | Extended |
| AH25-SL1#@@*& | AR22F0M-@@*&# | | AH30-SL1#@@*& | (AR22 series+AR9Y003) | Flush |
| AH25-SL5#@@*& | AR22E5M-@@*&# | | AH30-SL5#@@*& | (AR22 series+AR9Y003) | Extended |
| AH25-SL6#@@*& | AR22F5M-@@*&# | | AH30-SL6#@@*& | (AR22 series+AR9Y003) | Flush |
| AH25-SP2#@@ | AR22PY-2@@# | | AH30-SP2#@@ | (AR22 series+AR9Y003) | Selector |
| AH25-SP3#@@ | AR22PY-3@@# | | AH30-SP3#@@ | (AR22 series+AR9Y003) | switch |

@: contacts arrangement
#: color of button or grove
*: lamp voltage
&: lamp type
$: draw-out position of key
%: type of key

# AH-series Pushbutton cross to AR-series Pushbutton

| Discontinued | Replacement | | Discontinued | Replacement | |
|---|---|---|---|---|---|
| PART # | PART # | | PART # | PART # | TYPE |
| AH22-SZ#*& | DR22F3M-*&# | | AH30-SZ#*& | | Pilot light |
| AH22-TZ#*& | DR22E3N-*&# | | - | - | |
| - | - | | AH30-T#11*& | AR30Q7L-11*&# | Push-pull |
| AH22-UH@@ | - | | - | - | Wabble |
| AH25-UB@@ | - | | AH30-UB@@ | - | stick |
| - | - | | AH30-V1R@@ | AR30V1R-@@R | E-stop |
| - | - | | AH30-V5R@@ | - | |
| - | - | | AH30-V6R@@ | - | |
| - | - | | AH30-VEL1R@@ | - | |
| - | - | | AH30-VELR@@*& | AR30V2L-@@*&R | |
| - | - | | AH30-VER@@ | AR30V2R-@@R | |
| AH22-VJR@@ | AR22V7R-@@R | | - | - | |
| AH22-VL1R@@*& | AR22VAL-@@*&R | | - | - | |
| AH22/25-VLR@@*& | AR22V2L-@@*&R | | AH30VLR@@*& | AR30V2L-@@*&R | |
| AH22-VNLR@@*& | AR22VKL-@@*&R | | - | - | |
| AH22-VNR@@ | AR22VKR-@@R | | - | - | |
| AH22/25-VR@@ | AR22V2R-@@R | | AH30-VR@@* | AR30V2R-@@R | |
| AH22-VSJR@@ | AR22V7R-@@R | | - | - | |
| AH22-VSLR@@*& | AR22V2L-@@*&R | | - | - | |
| AH22-VSR@@ | AR22V4R-@@R | | - | - | |
| - | - | | AH30-W1#@@ | - | Lever |
| - | - | | AH30-W3#@@ | - | select |
| - | - | | AH30-X1B* | DR30B6-*B | Buzzer |
| AH22-X2B* | DR22B3-*B | | AH30-X2B* | DR30B0-*B | |
| AH22-XB* | DR22B5-*B | | AH30-XB* | DR30B5-*B | |
| AH22-YE#@@ | AR22E0Y-@@# | | - | - | Extended |
| AH22-YE5#@@ | AR22E5Y-@@# | | - | - | head |
| AH22-YEL#@@*& | AR22E0P-@@*&# | | - | - | |
| AH22-YEL5#@@*& | AR22E5P-@@*&# | | - | - | |
| AH22-YF#@@ | AR22F0Y-@@# | | - | - | Flush |
| AH22-YF5#@@ | AR22F5Y-@@# | | - | - | head |
| AH22-YJ0A@@% | AR22JY-0A@@% | | - | - | Selector |
| AH22-YJ1E@@% | AR22JY-1E@@% | | - | - | switch |
| AH22-YJ2$@@% | AR22JY-2$@@% | | - | - | |
| AH22-YJ3$@@% | AR22JY-3$@@% | | - | - | |
| AH22-YJ6$@@% | AR22JY-6$@@% | | - | - | |
| AH22-YJ7$@@% | AR22JY-7$@@% | | - | - | |
| AH22-YJC1E@@@% | AR22JCY-1$@@@% | | - | - | |
| AH22-YJC3$@@@% | AR22JCY-3$@@@% | | - | - | |
| AH22-YJC6$@@@% | AR22JCY-6$@@@% | | - | - | |
| AH22-YJC7$@@@% | AR22JCY-7$@@@% | | - | - | |
| AH22-YMS#@@ | AR22M4Y-@@# | | - | - | Mushroom |
| AH22-YMS5#@@ | - | | - | - | head |

@: contacts arrangement
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%: type of key

| Discontinued | Replacement | | Discontinued | Replacement | |
|---|---|---|---|---|---|
| PART # | PART # | | PART # | PART # | TYPE |
| AH22-YP0#@@ | AR22PY-0@@# | | - | - | Selector |
| AH22-YP1#@@ | AR22PY-1@@# | | - | - | switch |
| AH22-YP2#@@ | AR22PY-2@@# | | - | - | |
| AH22-YP3#@@ | AR22PY-3@@# | | - | - | |
| AH22-YP6#@@ | AR22PY-6@@# | | - | - | |
| AH22-YP7#@@ | AR22PY-7@@# | | - | - | |
| AH22-YPC1#@@@ | AR22PCY-1@@@# | | - | - | |
| AH22-YPC3#@@@ | AR22PCY-3@@@# | | - | - | |
| AH22-YPC6#@@@ | AR22PCY-6@@@# | | - | - | |
| AH22-YPC7#@@@ | AR22PCY-7@@@# | | - | - | |
| AH22-YPL0#@@*& | AR22PP-0@@*&# | | - | - | |
| AH22-YPL1#@@*& | AR22PP-1@@*&# | | - | - | |
| AH22-YPL2#@@*& | AR22PP-2@@*&# | | - | - | |
| AH22-YPL3#@@*& | AR22PP-3@@*&# | | - | - | |
| AH22-YPL6#@@*& | AR22PP-6@@*&# | | - | - | |
| AH22-YPL7#@@*& | AR22PP-7@@*&# | | - | - | |
| AH22-YPR0#@@ | AR22RY-0@@# | | - | - | |
| AH22-YPR1#@@ | AR22RY-1@@# | | - | - | |
| AH22-YPR2#@@ | AR22RY-2@@# | | - | - | |
| AH22-YPR3#@@ | AR22RY-3@@# | | - | - | |
| AH22-YPR6#@@ | AR22RY-6@@# | | - | - | |
| AH22-YPR7#@@ | AR22RY-7@@# | | - | - | |
| AH22-YPRC1#@@@ | AR22RCY-1@@@# | | - | - | |
| AH22-YPRC3#@@@ | AR22RCY-3@@@# | | - | - | |
| AH22-YPRC6#@@@ | AR22RCY-6@@@# | | - | - | |
| AH22-YPRC7#@@@ | AR22RCY-7@@@# | | - | - | |
| AH22-YPW0#@@ | AR22WY-0@@# | | - | - | |
| AH22-YPW1#@@ | AR22WY-1@@# | | - | - | |
| AH22-YPW2#@@ | AR22WY-2@@# | | - | - | |
| AH22-YPW3#@@ | AR22WY-3@@# | | - | - | |
| AH22-YPW6#@@ | AR22WY-6@@# | | - | - | |
| AH22-YPW7#@@ | AR22WY-7@@# | | - | - | |
| AH22-YPWC1#@@@ | AR22WCY-1@@@# | | - | - | |
| AH22-YPWC3#@@@ | AR22WCY-3@@@# | | - | - | |
| AH22-YPWC6#@@@ | AR22WCY-6@@@# | | - | - | |
| AH22-YPWC7#@@@ | AR22WCY-7@@@# | | - | - | |
| AH22-YS1 to 6#*& | - | | - | - | w/selector ring |
| AH22-YZ#*& | DR22E3P-*&# | | - | - | Pilot |
| AH22-Z#*& | DR22E3L-*&# | | - | - | light |
| AH22/25-ZM#*& | DR22D0L-*&# | | AH30-ZM#*& | DR30D0L-*&# | |
| AH25-ZN#*& | | | AH30-ZN#*& | DR30F4M-*&# | |
| - | DR22F4M-*&# | | - | - | |
| - | - | | AH30-ZN1#*& | DR30F4N-*&# | |
| - | - | | AH30-ZN2#*& | DR30F4N-*&# | |
| - | - | | AH30-ZN4#*& | DR30M4M-*&# | |
| AH25-ZK#*& | DR22K0L-*&# | | AH30-ZK#*& | DR30K0L-*&# | |
| AH25-ZS#*& | DR22E3M-*&# | | - | - | |
| - | - | | AH30-ZS#*& | DR30F4M-*&# | |
| - | - | | AH30-ZV#*& | DR30D1L-*&# | |

@: contacts arrangement
#: color of button or grove
*: lamp voltage
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$: draw-out position of key
%: type of key

# AH-series Pushbutton cross to AR-series Pushbutton

| Discontinued | Replacement | | | Discontinued | Replacement |
|---|---|---|---|---|---|
| AH22 | AH25 (*1) | AR22 | | AH30 (*1) | AR30 |
| AH22-%#012 | AH25-PC#012 | AR22&-3014# | | AH30-$#012 | AR30&-3014# |
| AH22-%#022 | AH25-PC#022 | AR22&-3024# | | AH30-$#022 | AR30&-3024# |
| AH22-%#032 | AH25-PC#032 | AR22&-303C# | | AH30-$#032 | AR30&-303C# |
| AH22-%#033 (*1) | - | AR22&-303C# | | - | - |
| AH22-%#042 | AH25-PC#042 | AR22&-3044# | | AH30-$#042 | AR30&-3044# |
| AH22-%#052 | AH25-PC#052 | AR22&-3054# | | AH30-$#052 | AR30&-3054# |
| AH22-%#062 | AH25-PC#062 | AR22&-3064# | | AH30-$#062 | AR30&-3064# |
| AH22-%#071 | - | AR22&-307F# | | - | - |
| AH22-%#072 | AH25-PC#072 | AR22&-307C# | | AH30-$#072 | AR30&-307C# |
| AH22-%#073 (*1) | - | AR22&-307C# | | - | - |
| AH22-%#082 | AH25-PC#082 | AR22&-3084# | | AH30-$#082 | AR30&-3084# |
| AH22-%#092 | AH25-PC#092 | AR22&-3094# | | AH30-$#092 | AR30&-3094# |
| AH22-%#102 | AH25-PC#102 | AR22&-3104# | | AH30-$#102 | AR30&-3104# |
| AH22-%#112 | AH25-PC#112 | AR22&-311C# | | AH30-$#112 | AR30&-311C# |
| AH22-%#114 (*1) | - | AR22&-311C# | | - | - |
| AH22-%#122 | AH25-PC#122 | AR22&-3124# | | AH30-$#122 | AR30&-3124# |
| AH22-%#132 | AH25-PC#132 | AR22&-3134# | | AH30-$#132 | AR30&-3134# |
| - | AH25-PC#142 | AR22&-314D# | | AH30-$#142 | AR30&-314D# |
| AH22-%#143 | - | AR22&-314D# | | - | - |
| - | AH25-PC#152 | AR22&-315A# | | AH30-$#152 | AR30&-315A# |
| AH22-%#153 | - | AR22&-315A# | | - | - |
| AH22-%#162 | AH25-PC#162 | AR22&-3164# | | AH30-$#162 | AR30&-3164# |
| AH22-%#172 | AH25-PC#172 | AR22&-3174# | | AH30-$#172 | AR30&-3174# |
| AH22-%#182 | AH25-PC#182 | AR22&-3184# | | AH30-$#182 | AR30&-3184# |
| AH22-%#192 | AH25-PC#192 | AR22&-3194# | | AH30-$#192 | AR30&-3194# |
| - | AH25-PC#202 | AR22&-320B# | | AH30-$#202 | AR30&-320B# |
| AH22-%#204 | - | AR22&-320B# | | - | - |
| - | AH25-PC#212 | AR22&-3094# | | AH30-$#212 | AR30&-3094# |
| AH22-%#412 | - | AR22&-441C# | | - | - |
| AH22-%#512 | - | AR22&-551C# | | - | - |

%: JC, PC, PRC, PWC, YPC, YPRC, YPW, YJC, PCL

$: PC, JC

&: JCR, PCR, RCR, WCR, JCY, PCY, RCY, WCY

Note *1: Terminal wirings for AR series are different from AH series

| Knob | Bezel | AH22 | AH25 (*1) | AR22 | | AH30 (*1) | AR30 |
|---|---|---|---|---|---|---|---|
| Standard | Round | PC | PC | PCR | | PC | PCR |
| | Square | YPC | - | PCY | | - | - |
| Long | Round | PWC | - | WCR | | - | - |
| | Square | YPWC | - | WCY | | - | - |
| Round | Round | PRC | - | RCR | | - | - |
| | Square | YPRC | - | RCY | | - | - |
| Key | Round | JC | - | JCR | | JC | JCR |
| | Square | YJC | - | JCY | | - | - |
| Illuminated Standard | Round | PCL | - | - | | - | - |

| Discontinued | Replacement | |
|---|---|---|
| PART # | PART # | TYPE |
| RCa470-AE#@ | AR30E5R-@@# | Round extended head |
| RCa470-AF@ | AR30F5R-@@# | Flush head |
| RCa470-AG#@ | - | w/guard |
| RCa470-AG1#@ | AR30G6R-@@# | w/guard |
| RCa470-B1#@ | AR30B0R-@@# | Giant head |
| RCa470-B2#@ | AR30B1R-@@# | |
| RCa470-B3#@ | AR30B2R-@@# | |
| RCa470-B4#@ | AR30B3R-@@# | |
| RCa470-D@% | - | Push button w/key |
| RCa470-EF#@ | AR30E0R-@@# | Round extended head |
| RCa470-F#@ | AR30F0R-@@# | Flush head |
| RCa470-G#@ | AR30G0R-@@# | w/guard |
| RCa470-G1#@ | AR30G1R-@@# | |
| RCa470-H2#@ | AR30WR-2@@# | Selector switch |
| RCa470-H3#@ | AR30WR-3@@# | |
| RCa470-HA01#@ | AR30WR-1@@# | |
| RCa470-J2$@% | AR30JR-2$@@% | Key selector switch |
| RCa470-J3$@% | AR30JR-3$@@% | |
| RCa470-JA01$@% | AR30JR-1E@@% | |
| RCa470-JA2$@% | AR30JR-0A@@% | |
| RCa470-JA3$@% | AR30JR-6$@@% | |
| RCa470-JC3$@@@% | AR30JCR-3$@@@% | |
| RCa470-K2$@% | - | |
| RCa470-K3$@% | - | |
| RCa470-L#@(T)* | AR30E0L-@@*&# | Round extended head |
| RCa470-L#@(T)*G | AR30G4L-@@*&# | w/guard |
| RCa470-L#@*GS | AR30G3L-@@*&# | |
| RCa470-L3#@(T)* | - | Round extended head |
| RCa470-L4#1(T)* | - | |
| RCa470-M#@ | AR30M0R-@@# | Mushroom head |
| RCa470-M1#@ | - | |
| RCa470-M2#@ | AR30M3R-@@# | |
| RCa470-N#@ | AR30N0R-@@R | Turn-lock |

@: contacts arrangement
#: color of button or grove
*: lamp voltage
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| Discontinued | Replacement | |
|---|---|---|
| PART # | PART # | TYPE |
| RCa470-P2#@ | AR30PR-2@@# | Selector switch |
| RCa470-P3#@ | AR30PR-3@@# | |
| RCa470-PA01#@ | AR30PR-1@@# | |
| RCa470-PA2#@ | AR30PR-0@@# | |
| RCa470-PA3#@ | AR30PR-6@@# | |
| RCa470-PC#@@@ | AR30PCR-3@@@# | |
| RCa470-PL3#2@* | AR30PL-2@@*&# | |
| RCa470-PL3#3@* | AR30PL-3@@*&# | |
| RCa470-Q#@ | - | Pull type |
| RCa470-S1#2 | AR30S1R-22# | w/selector ring |
| RCa470-S2#2 | AR30S2R-22# | |
| RCa470-S3#2 | AR30S3R-22# | |
| RCa470-S4#2 | - | |
| RCa470-S5#2 | - | |
| RCa470-S6#2 | AR30S6R-22# | |
| RCa470-T#1(T)* | AR30Q7L-11*&# | Push-pull |
| RCa470-UB@ | AR30A!!-@@@@B | Wabble stick type |
| RCa470-V#@ | AR30V0R-@@# | E-stop |
| RCa470-V1#@ | AR30V1R-@@R | |
| RCa470-V1J#@ | - | |
| RCa470-VJ#@ | - | |
| RCa470-W1#@ | - | Lever select |
| RCa470-W3#@ | - | |
| RCa470-ZK#(T)* | DR30K0L-*&# | Pilot light |
| RCa470-ZK3#(T)* | - | |
| RCa470-ZM#(T)* | DR30D0L-*&# | |
| RCa470-ZM3#(T)* | - | |
| RCa470-ZN#(T)* | DR30F4M-*&# | |
| RCa470-ZN1#(T)* | DR30F4N-*&# | |
| RCa470-ZN2#(T)* | - | |
| RCa470-ZN3#(T)* | - | |
| RCa470-ZS#(T)* | - | |
| RCa470-ZS3#(T)* | - | |

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**Prices**
All prices are subject to change without notice. In the event of a price change, the effective date of the change will be the date on the new price or discount schedule sheet.
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Terms of minimum order will be shown on quotations, or if orders amounting to less than the latest minimum order amount, a handling fee will be applied.

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The weight and dimensions of products described in this catalog are the best information available at the time of going to press. As Seller follows a policy of continuous product improvement, design changes may make this information obsolete. Information in this catalog is subject to change without notice.

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