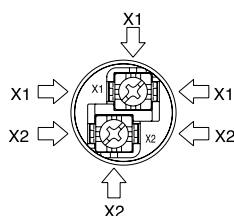


# Command 22mm Pilot Lights

**DR22E3L-E3GZA****DR22E3L-L3SZA**

| Command 22mm Pilot Lights            |        |         |                            |                |                                  |
|--------------------------------------|--------|---------|----------------------------|----------------|----------------------------------|
| Part Number                          | Color  | Price   | Drawing Link               | Lens           | Lamp Voltage                     |
| <a href="#"><u>DR22E3L-E3RZA</u></a> | Red    | \$18.50 | <a href="#"><u>PDF</u></a> | extended round | 24V AC/DC<br>without transformer |
| <a href="#"><u>DR22E3L-E3GZA</u></a> | Green  | \$18.50 | <a href="#"><u>PDF</u></a> |                |                                  |
| <a href="#"><u>DR22E3L-E3YZA</u></a> | Yellow | \$18.50 | <a href="#"><u>PDF</u></a> |                |                                  |
| <a href="#"><u>DR22E3L-E3SZA</u></a> | Blue   | \$26.50 | <a href="#"><u>PDF</u></a> |                |                                  |
| <a href="#"><u>DR22E3L-E3WZA</u></a> | White  | \$18.50 | <a href="#"><u>PDF</u></a> |                |                                  |
| <a href="#"><u>DR22E3L-L3RZA</u></a> | Red    | \$23.00 | <a href="#"><u>PDF</u></a> |                | 115-127 VAC<br>with transformer  |
| <a href="#"><u>DR22E3L-L3GZA</u></a> | Green  | \$23.00 | <a href="#"><u>PDF</u></a> |                |                                  |
| <a href="#"><u>DR22E3L-L3YZA</u></a> | Yellow | \$23.00 | <a href="#"><u>PDF</u></a> |                |                                  |
| <a href="#"><u>DR22E3L-L3SZA</u></a> | Blue   | \$35.00 | <a href="#"><u>PDF</u></a> |                |                                  |
| <a href="#"><u>DR22E3L-L3WZA</u></a> | White  | \$23.00 | <a href="#"><u>PDF</u></a> |                |                                  |

## DR22E3L-E3xxx Terminal Layout



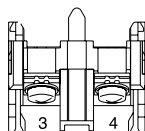
# Accessories for 22mm Command Series Pilot Devices

**AR9B290**

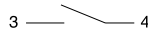
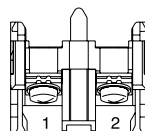
| Contact Blocks for Command Series 22mm Pushbuttons |     |        |                            |       |          |
|--|-----|--------|----------------------------|-------|----------|
| Part Number  | Qty | Price  | Drawing Link               | Color | Contacts |
| <a href="#"><u>AR9B290</u></a>                     | 1   | \$6.75 | <a href="#"><u>PDF</u></a> | Blue  | N.O.     |
| <a href="#"><u>AR9B291</u></a>                     | 1   | \$6.75 | <a href="#"><u>PDF</u></a> | Red   | N.C.     |

Minimum current requirement AC/DC is 5mA

## Terminal Layout



Terminal No.3, 4

**AR9B290**

Terminal No.1, 2

**AR9B291**

Max 6 contacts for non-illuminated momentary devices. Max 4 for alternate action non-illuminated devices.  
 Max 5 contacts for illuminated momentary devices. Max 3 for alternate action illuminated devices.  
 \*Exceeding the maximum number of contacts could affect the mechanical durability of the operators.

**AR9B291**

## LED Bulbs for Command Series 22mm Pilot Devices

| Part Number                       | Color  | Qty | Price   | Use With           | Lamp Voltage | Current Consumption | Power Consumption | Lamp Durability |
|-----------------------------------|--------|-----|---------|--------------------|--------------|---------------------|-------------------|-----------------|
| <a href="#"><u>APX510-24R</u></a> | Red    | 2   | \$17.00 | AR22 / DR22 Series | 24V AC/DC    | 12mA AC<br>11mA DC  | 0.8 W             | 30,000h         |
| <a href="#"><u>APX510-24G</u></a> | Green  | 2   | \$17.00 |                    |              |                     |                   |                 |
| <a href="#"><u>APX510-24Y</u></a> | Yellow | 2   | \$17.00 |                    |              |                     |                   |                 |
| <a href="#"><u>APX510-24S</u></a> | Blue   | 2   | \$63.00 |                    |              |                     |                   |                 |
| <a href="#"><u>APX510-24O</u></a> | Orange | 2   | \$17.00 |                    |              |                     |                   |                 |

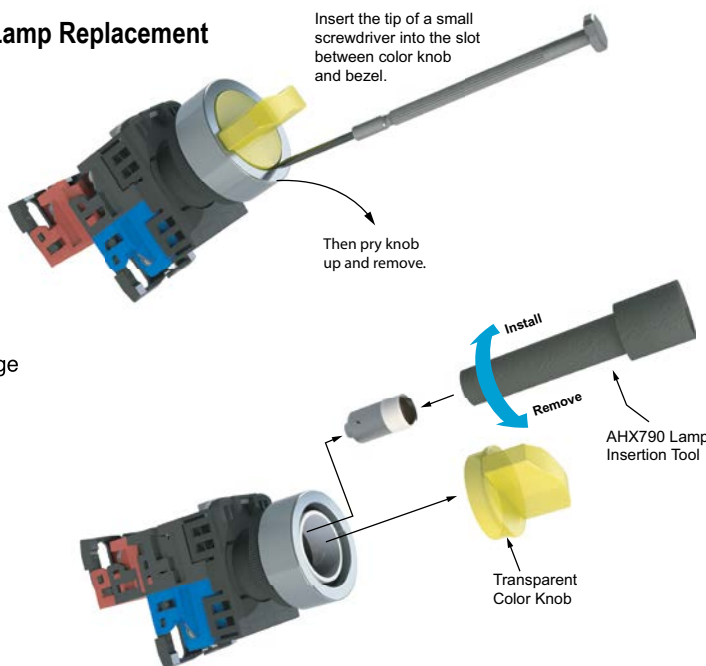
\*Lamp base: Ba9s/13

**APX510-24R**

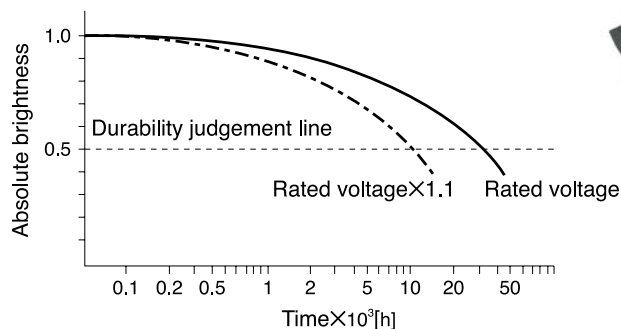
## Lamp Replacement

Insert the tip of a small screwdriver into the slot between color knob and bezel.

Then pry knob up and remove.

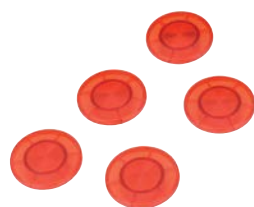


## Estimated durability for LED lamps

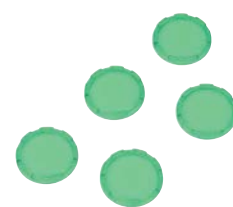
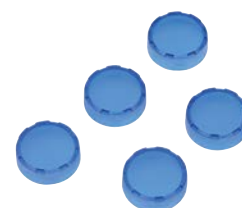


Notes: • Durability at Ta=25°C  
 • Durability is affected by temperature, humidity, and voltage fluctuation.

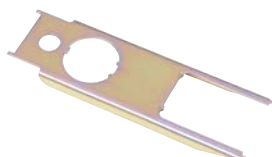
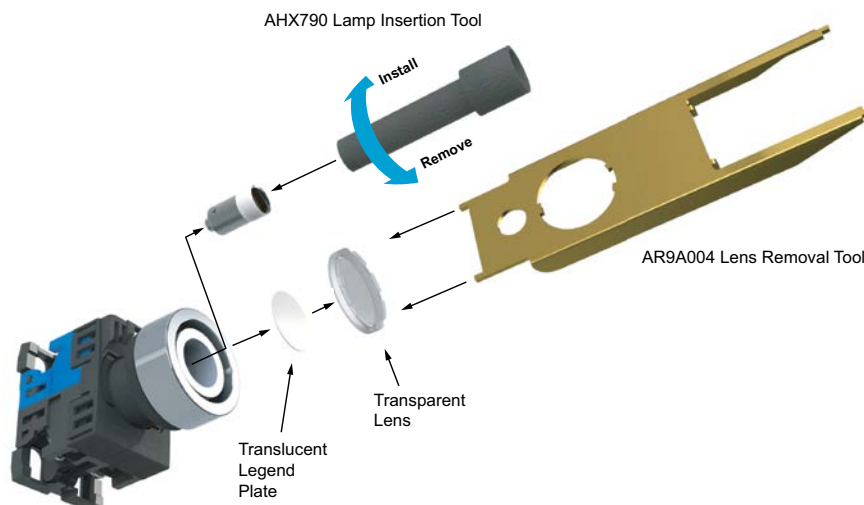
# Accessories for 22mm Command Series Pilot Devices

**AR9C016-R****AR9C021-R**

| Lenses for Command Series 22mm Illuminated Pushbuttons |        |     |         |                     |                    |
|--|--------|-----|---------|---------------------|--------------------|
| Part Number  | Color  | Qty | Price   | Drawing Link        | Use With           |
| <a href="#">AR9C016-R</a>                              | Red    | 5   | \$5.25  | <a href="#">PDF</a> | AR22MOL, AR22M5L   |
| <a href="#">AR9C021-R</a>                              | Red    | 5   | \$16.00 | <a href="#">PDF</a> | AR22VOR, AR22VOL   |
| <a href="#">AR9C011-R</a>                              | Red    | 5   | \$2.50  | <a href="#">PDF</a> | AR22FOL<br>AR22F5L |
| <a href="#">AR9C011-G</a>                              | Green  | 5   | \$2.50  | <a href="#">PDF</a> |                    |
| <a href="#">AR9C011-Y</a>                              | Yellow | 5   | \$2.50  | <a href="#">PDF</a> |                    |
| <a href="#">AR9C011-S</a>                              | Blue   | 5   | \$2.50  | <a href="#">PDF</a> |                    |
| <a href="#">AR9C011-C</a>                              | Clear  | 5   | \$2.50  | <a href="#">PDF</a> |                    |
| <a href="#">AR9C012-R</a>                              | Red    | 5   | \$2.50  | <a href="#">PDF</a> | AR22EOL            |
| <a href="#">AR9C012-G</a>                              | Green  | 5   | \$2.50  | <a href="#">PDF</a> |                    |
| <a href="#">AR9C012-Y</a>                              | Yellow | 5   | \$2.50  | <a href="#">PDF</a> |                    |
| <a href="#">AR9C012-S</a>                              | Blue   | 5   | \$2.50  | <a href="#">PDF</a> |                    |
| <a href="#">AR9C012-C</a>                              | Clear  | 5   | \$2.50  | <a href="#">PDF</a> |                    |

**AR9C011-G****AR9C012-S****AHX790**

| Tools and Lock Nut for Use with Command Series 22mm Pilot Devices |     |        |                     |                          |
|---|-----|--------|---------------------|--------------------------|
| Part Number   | Qty | Price  | Drawing Link        | Description              |
| <a href="#">AHX790</a>  | 1   | \$3.75 | <a href="#">PDF</a> | Bulb removal tool        |
| <a href="#">AHX702</a>  | 1   | \$6.50 | N/A                 | Wrench/lamp removal tool |
| <a href="#">AR9A004</a>   | 1   | \$5.25 | N/A                 | Wrench                   |
| <a href="#">AR9R744</a>   | 5   | \$2.50 | <a href="#">PDF</a> | Lock nut                 |

**AHX702****AR9A004****AR9R744**

# Command Series 22mm Pilot Devices Specifications

| Specifications (Indoor Use)                              |   |   |                                   |
|--|---|---|-----------------------------------|
|  | <i>Pushbuttons</i><br><i>Emergency stop pushbuttons</i><br><i>Selector switches</i>                         | <i>Joysticks</i>  | <i>Pilot Lights</i>               |
| <b>Rated thermal current (contact block)</b>             | A600 / P600   | –   | –                                 |
| <b>Mechanical durability</b>                             | See durability table below  | 250,000 operations  | –                                 |
| <b>Electrical durability</b>                             | 500,000 operations at 220V AC 6A<br>1 million operations at 220V AC 3A                                      | 100,000 operations at 220V AC 1A<br>(Res. load)                     | –                                 |
| <b>Operating frequency</b>                               | 1200 operations/hour (On-load factor: 40%)  |   | –                                 |
| <b>Operating force (Avg)</b>                             | 9N – Pushbuttons<br>30-45 N – Emergency stop pushbuttons<br>0.15 - 0.1 N·m – Selector switches              | Less than 100N  |                                   |
| <b>Positive opening operation</b>                        | All functions incorporating a N.C. contact are positive-opening operation.                                  |   |                                   |
| <b>Dielectric strength</b>                               | 2,500VAC, 1 minute<br>(w/o transformer 2000VAC)   | 2000VAC, 1 minute (Pilot light with transformer: 2500 VAC, 1minute) |                                   |
| <b>Insulation resistance</b>                             | 100MΩ or more (500VDC megger)   |   |                                   |
| <b>Rated impulse dielectric strength</b>                 | 6kV   | –   | 6kV                               |
| <b>Conditional short-circuit current</b>                 | 1000A   |   | –                                 |
| <b>Short-circuit protective device</b>                   | Fuse 15A (recommended, not supplied)  | Fuse 1A (recommended, not supplied)                                 | –                                 |
| <b>Pollution degree</b>                                  | 3   |   |                                   |
| <b>Vibration</b>   | Resonance: 10 to 55Hz, double amplitude 0.1 mm* / Constant: 16.7 Hz, double amplitude 3mm                   |   |                                   |
| <b>Shock</b>   | Malfunction durability: 100 m/s² ** /   | Mechanical durability: 500 m/s²                                     | Mechanical durability: 500 m/s²   |
| <b>Ambient temperature (no condensation or no icing)</b> | -20 to +70°C [-4 to +158°F]<br>Illuminated type: -20 to -50°C [-4 to -58°F]                                 | -5 to +60°C [+23 to +140°F]   | -2 to +50°C [-4 to +122°F]        |
| <b>Temperature ratings</b>                               | Storage: -40 to +80°C [-40 to +176°F]   |   |                                   |
| <b>Humidity</b>  | 45 to 85% RH (within -5° to +40°C)  |   |                                   |
| <b>Degree of protection</b>                              | IP65  |   |                                   |
| <b>Initial contact resistance</b>                        | ≤ 50mΩ  | –   | –                                 |
| <b>Terminal markings</b>                                 | IEC 60445   | –   | –                                 |
| <b>Connections</b>                                       | AWG 18 to AWG 14; Stripping length: 8mm to 11mm / Tightening torque: 0.8 to 1.0 N·m, 7.1 in·lb to 8.8 in·lb |   |                                   |
| <b>Contacts operation</b>                                | Self-cleaning types. Slow action. Positive opening.   |   |                                   |
| <b>Operation frequency</b>                               | 1,200 cycle/hour (Application ratio 40%)  | –   | –                                 |
| <b>Utilization category/contact ratings</b>              | AC-15: 24VAC at 6A, 110VAC at 6A<br>DC-13: 24VDC at 4A, 110VDC at 1.3 A                                     | AC-1: 110VAC at 0.3 A<br>DC-13: 24VDC at 0.7 A, 110VDC at 0.15 A    | –                                 |
| <b>Rated insulation voltage</b>                          | 600V AC/DC***   | 250V AC/DC  | 250V AC/DC (w/transformer 600VAC) |
| <b>Materials</b>   | Enclosure: Polyamide / Contacts: silver, nickel   |   |                                   |
| <b>Standards</b>   | UL 508, CSA C22.2, No.14, TUV - EN60947-5-1   |   |                                   |
| <b>Approvals</b>   | UL file E44592, CSA file LR20479  |   |                                   |

\* Emergency stop type: 10 to 500 Hz, double amplitude 0.7mm(acceleration 50m/s<sup>2</sup>), according to test condition of EN60947-5-5 (1998)

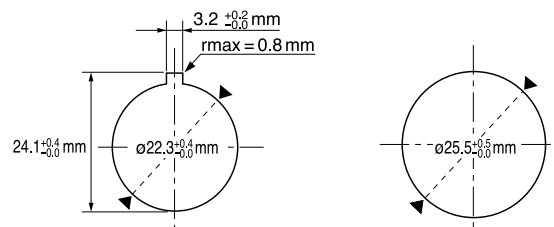
\*\* Emergency stop type: 150 m/s<sup>2</sup> \*\*\*Illuminated type without transformer

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

Note: Key insertion/removal durability for selector switch key types • Key type 10,000

## 22mm Pilot Devices Cutouts

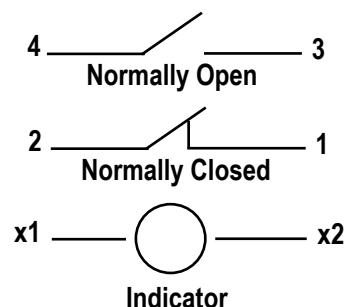
AR22 pilot devices can be mounted in either 22.3 or 25.5 mm diameter holes as shown in the figure below without any extra adapter.



Note: If key washer or legend plate is not used, 3.2 mm-wide location holes do not need to be cut out.

## Control Circuit Contact Electrical Ratings and Wiring

### Typical Wiring



### NEMA Mechanical Switching Ratings and Test Values for DC Control Circuit Contacts

| Contact Rating Designation | Thermal Continuous Test Current (A) | Maximum Make or Break DC Current (A) |           |                  | Volt amperes |
|----------------------------|-------------------------------------|--------------------------------------|-----------|------------------|--------------|
|                            |                                     | 125 Volts                            | 250 Volts | 301 to 600 Volts |              |
| <b>P300</b>                | 5.0                                 | 1.1                                  | 0.55      | ---              | 138          |
| <b>P600</b>                | 5.0                                 | 1.1                                  | 0.55      | 0.20             | 138          |
| <b>Q300</b>                | 2.5                                 | 0.55                                 | 0.27      | ---              | 69           |
| <b>Q600</b>                | 2.5                                 | 0.55                                 | 0.27      | 0.10             | 69           |
| <b>R300</b>                | 1.0                                 | 0.22                                 | 0.11      | ---              | 28           |

This chart is provided as a guideline only, and the ratings and values are not guaranteed to be accurate. It is the users' responsibility to properly size their control circuit devices. The chart values are from NEMA Standard ICS 5-2000, Table 1-4-2.

### NEMA Mechanical Switching Ratings and Test Values for AC Control Circuit Contacts

| Contact Rating Designation | Thermal Continuous Test Current (A) | Maximum AC Current, 50/60Hz (A) |       |           |       |           |       |           |       | Volt amperes |       |
|----------------------------|-------------------------------------|---------------------------------|-------|-----------|-------|-----------|-------|-----------|-------|--------------|-------|
|                            |                                     | 120 Volts                       |       | 240 Volts |       | 480 Volts |       | 600 Volts |       |              |       |
|                            |                                     | Make                            | Break | Make      | Break | Make      | Break | Make      | Break | Make         | Break |
| A300                       | 10                                  | 60                              | 6.00  | 30        | 3.00  | ---       | ---   | ---       | ---   | 7200         | 720   |
| A600                       | 10                                  | 60                              | 6.00  | 30        | 3.00  | 15        | 1.50  | 12        | 1.20  | 7200         | 720   |
| B300                       | 5                                   | 30                              | 3.00  | 15        | 1.50  | ---       | ---   | ---       | ---   | 3600         | 360   |
| B600                       | 5                                   | 30                              | 3.00  | 15        | 1.50  | 7.5       | 0.75  | 6         | 0.60  | 3600         | 360   |
| C600                       | 2.5                                 | 15                              | 1.5   | 7.5       | 0.75  | 3.75      | 0.375 | 3.00      | 0.30  | 1800         | 180   |

This chart is provided as a guideline only, and the ratings and values are not guaranteed to be accurate. It is the users' responsibility to properly size their control circuit devices. The chart values are from NEMA Standard ICS 5-2000, Table 1-4-1.

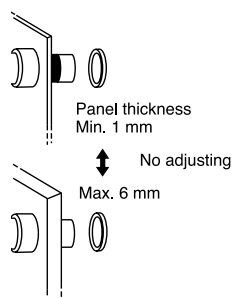
# Fuji Electric 22mm Pilot Devices Overview

## Pushbuttons, Selectors, Pilot Lights, Joysticks, Buzzers

Fuji Electric AR22 pilot devices can be mounted on panels up to 6mm thick by securing the operator with a locking nut from behind the panel without needing any adjustment.

### Easy mounting

Fuji AR22 pilot devices can be mounted on panels between 1 and 6mm thick and are mountable in panel cutouts of 22.3 or 25.5 mm. The button and lens can be mounted on a panel while the operator is engaged.



### Pushbuttons



**AR22F0R-01RZA**

### Illuminated Pushbuttons



**AR22F0L-10E3YZA**

### Pilot Lights



**DR22E3L-E3SZA**

### E-Stop Pushbuttons



**AR22V0R-01R**

### Selector Switches



**AR22PR-210BZA**

### Buzzers



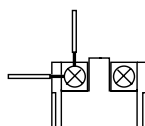
**DR22B8-EB**

### Wiring

These pilot devices can be wired in both vertical and lateral directions making wiring in narrow spaces easier. Contact block color coding makes wiring even easier.

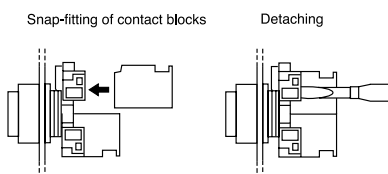
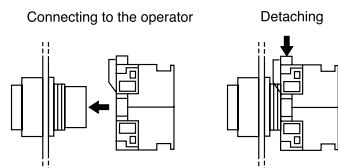
1N.O. Blue, 1N.C. Red

Lamp terminal and transformer unit: black



### Quick contact block and transformer replacement

Fuji AR22 pilot devices have a snap-on mounting that makes replacing or adding a contact block and transformer unit easier.



### Safety

AR22 pilot devices include terminal covers for added safety and security. Emergency stop pushbuttons include a trigger action mechanism that prevents the contacts from moving until the button is pushed and locked.

### Protection

AR22 pilot devices feature oil and dust-tight operator construction (IP65), except for buzzers DR22B5 (IP00), DR22B8 (IP54).

### Short depth

Fuji AR22 pilot devices are designed to occupy less space than traditional 22mm devices.

