

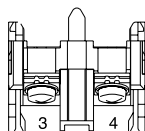
# Accessories for 22mm Command Series Pilot Devices

**AR9B290**

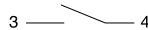
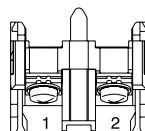
| Contact Blocks for Command Series 22mm Pushbuttons |     |        |                            |       |          |
|----------------------------------------------------|-----|--------|----------------------------|-------|----------|
| Part Number                                        | Qty | Price  | 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 |                    |              |                     |                   |                 |

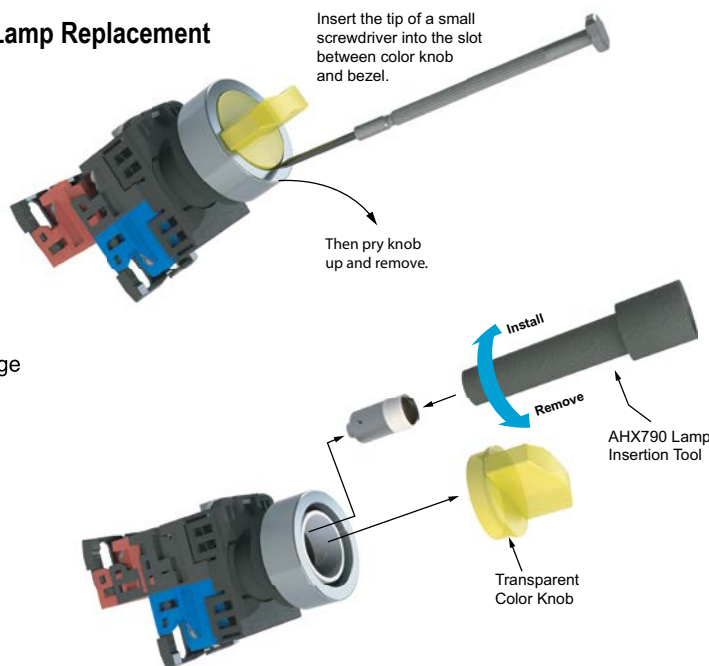
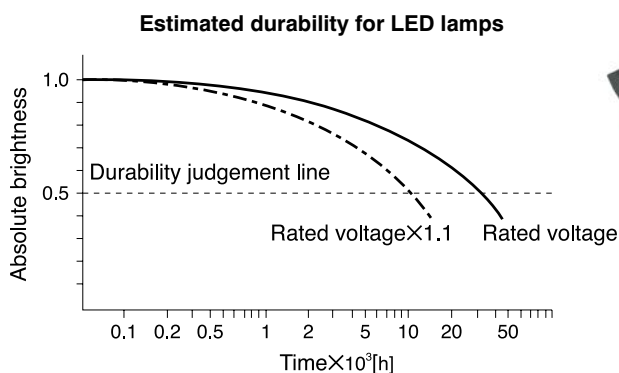
\*Lamp base: Ba9s/13

**APX510-24R**

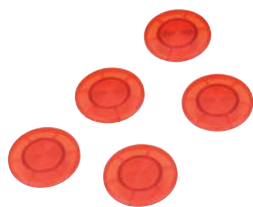
## Lamp Replacement

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

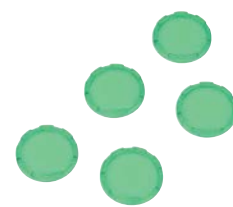
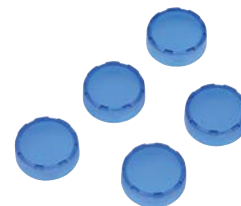
Then pry knob up and remove.



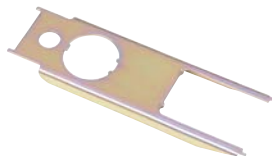
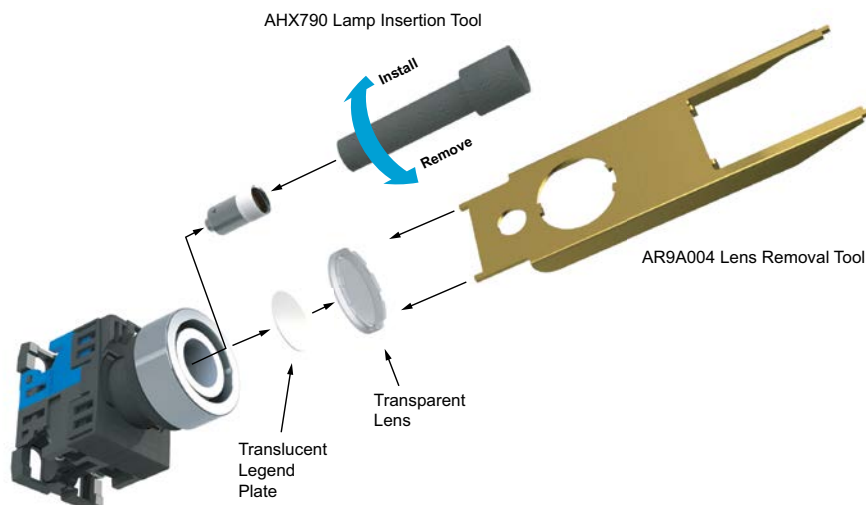
# Accessories for 22mm Command Series Pilot Devices

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

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

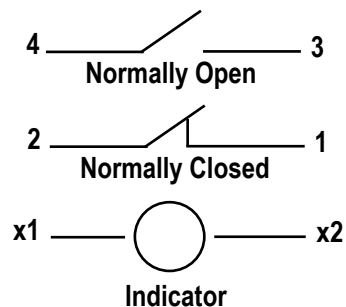
**AR9C011-G****AR9C012-S****AHX790**

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

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

## 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.



# 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)

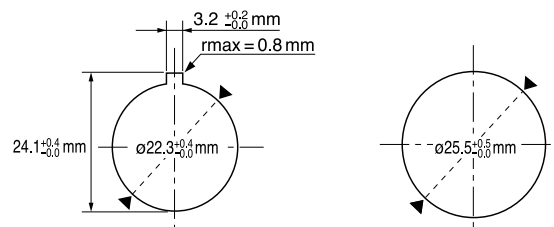
\*\* Emergency stop type: 150 m/s<sup>2</sup> \*\*\*Illuminated type without transformer

| 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.