Series	Type	Features
Command Series	**AR22 and DR22** 	• Standard models feature illumination with high brightness LEDs. • No adjusting of panel thickness is necessary. • The button and lens can be mounted on a panel while the operator is engaged. • Easy replacing contact block and transformer. • Wiring from two directions is possible. • The shortest among industrial pushbuttons. The transformer now occupies far less space. • A terminal cover are provided, assuring safety and security. • The emergency stop pushbuttons employ FUJI's original Trigger Action mechanism. They are suitable for emergency stop and safety. • Mountable even on panel cutout 25mm diameter. • AR22 and DR22 series of the ø22 Command Switches are approved by UL/CSA CCC and TÜV (EN standard). • Bearing CE markings.
	AR30 and DR30 	• Standard models feature illumination with high brightness LEDs. • Easy replacing contact block and transformer. • The shortest among industrial pushbuttons. The transformer now occupies far less space. • A terminal cover are provided, assuring safety and security. • The emergency stop pushbuttons employ FUJI's original Trigger Action mechanism. They are suitable for emergency stop and safety. • AR30 and DR30 series of the ø30 Command Switches are approved by UL/CSA, CCC and TÜV (EN standard). • Bearing CE markings.
	AR16 and AF16 	• An integrated operator component and contact mechanism that reduces control panel's depth. A unified depth of 28.4mm for the Standard type and 35.9mm for the Thin type. • Thin type and Standard types available for your control panel design. Select an optimum one to match your control panel design. • A wide variety of sockets help to reduce wiring. • Incorporating a gold-flashed SPDT or 2PDT contact mechanism with a snap-action structure that makes and breaks 1mA at 5V. • A key selector switch with a pin tumbler key and reversible type mechanism provides improved key insertion and removal (extraction) performance. • Complies with RoHS (EU Directive 2002/95/EC). • The standard AR16 and DR16, AF16 and DF16 series of the ø16 Command Switches are approved by UL/CSA, CCC and TÜV (EN standard). • Bearing CE markings.
	AH164 and AH165 **AH165-2** 	• Standard models feature illumination with high brightness LEDs. • Unified depth dimension of 24 mm for type with indicator and 42.5 mm for other types. • Application possible at 1 mA, 5 V due to gold-plated contacts and sliding structure. • Incandescent, neon and LED lamps are available. • Easy replacing contact block. • AH165-2 series are about twice as large as the AH165 series. • AH164 and AH165, AH165-2 series of the ø16 Command Switches are approved by UL/CSA, CCC and TÜV (EN standard). • Bearing CE markings.
	AM22 and DM22 	• Standard models feature illumination with high brightness LEDs. • Easy addition or replacement of text plates with front tightening nut mounting system. • Easy replacing contact block and transformer. • The shortest among industrial pushbuttons. The transformer now occupies far less space. • A terminal cover are provided, assuring safety and security. • The emergency stop pushbuttons employ FUJI's original Trigger Action mechanism. They are suitable for emergency stop and safety. • AM22 and DM22 series of the ø22 Command Switches are approved by UL/CSA, CCC and TÜV (EN standard). • Bearing CE markings.

	Page
	04/2

Type	AR22	DR22
Degree of protection	IP65	
Illuminated pushbutton switches	●	
Pushbutton switches	●	—
Emergency stop pushbutton switches	●	—
Emergency stop illuminated pushbutton switches	●	—
Selector switches	●	—
Illuminated selector switches	●	—
Joy stick selector switches	●	—
Buzzer	—	● (IP00, IP54)
Pilot lights	—	●

04/55

Type	AR30	DR30
Degree of protection	IP65	
Illuminated pushbutton switches	●	—
Pushbutton switches	●	—
Emergency stop pushbutton switches	●	—
Emergency stop illuminated pushbutton switches	●	—
Selector switches	●	—
Illuminated selector switches	●	—
Joy stick selector switches	●	—
Buzzer	—	● (IP00, IP54)
Pilot lights	—	●

04/129

Type	AR16	DR16	AF16	DF16
Degree of protection	IP65			
Illuminated pushbutton switches	●	—	●	—
Pushbutton switches	●	—	●	—
Emergency stop pushbutton switches	●	—	—	—
Emergency stop illuminated pushbutton switches	●	—	—	—
Selector switches	●	—	●	—
Pilot lights	—	●	—	●

04/186

Type	AH164	AH165	AH165-2
Degree of protection	IP40	IP65	IP65
Illuminated pushbutton switches	●	●	●
Pushbutton switches	●	●	●
Emergency stop pushbutton switches	—	●	—
Selector switches	●	●	●
Pilot lights	●	●	●
Buzzer	● (IP00)	● (IP54)	—

04CD/2/1

Type	AM22	DM22
Degree of protection	IP65	
Illuminated pushbutton switches	●	—
Pushbutton switches	●	—
Emergency stop pushbutton switches	●	—
Emergency stop illuminated pushbutton switches	●	—
Selector switches	●	—
Illuminated selector switches	●	—
Pilot lights	—	●

04 Pushbuttons, Selector Switches Pilot Lights, Control Selector Switches Panel Switches, Terminal Blocks

			Page
Command Series	**AR22 and DR22**	General information	04/2
		Quick reference guide	04/3
		Type number nomenclature	04/7
		Ratings and specifications	04/12
		Pushbuttons, selectors, pilot lights and buzzers	04/17
		Dimensions	04/40
		Notes on use	04/50
	AR30 and DR30	General information	04/55
		Quick reference guide	04/56
		Type number nomenclature	04/60
		Ratings and specifications	04/65
		Pushbuttons, selectors, pilot lights and buzzers	04/71
		Dimensions	04/94
		Notes on use	04/105
		Accessories for AR22/DR22 and AR30/DR30	04/108
		Special products	04/122
		Mass (AR22/DR22 and AR30/DR30)	04/125
	AR16, DR16 and AF16, DF16	General information	04/129
		Quick reference guide	04/130
		Ratings and specifications	04/136
		Type number nomenclature	04/139
		Type numbers and dimensions (AR16 and DR16)	04/143
		Type numbers and dimensions (AF16 and DF16)	04/154
		Panel cutout and mounting	04/167
		Notes on use	04/169
		Accessories	04/175
		Integrated contact structure AR16V series	04/180
	AH164 and AH165	General information	04/186
		Quick reference guide	04/187
		Type number nomenclature	04/191
		Ratings and specifications	04/193
		Pushbuttons, selectors, pilot lights and buzzers	04/195
		Mounting space	04/209
	AH165-2	General information	04/186
		Quick reference guide	04/187
		Type number nomenclature	04/191
		Ratings and specifications	04/212
		Pushbuttons, selectors and pilot lights	04/213
		Mounting space	04/223
		Notes on use (AH164, AH165 and AH165-2)	04/224
		Accessories for AH164, AH165 and AH165-2	04/227
		Mass (AH164, AH165 and AH165-2)	04/233
Multi Display Lights	**AP30F and AP40F**	General information	04/235
		Type number nomenclature	04/236
		Specifications and performance	04/237
		Dimensions	04/239
		Notes on use	04/243
		Accessories	04/247
		Window layout sheet	04/254
Rotary Switches	**AC09, AC16 and AC32**	Digital code output type	04/256
Cam Type	**RC310**	Control selector switches	04/263
Panel Switches	**NS387 and RC310**	Instrument switches	04/270
		Control switches	04/272
Terminal Blocks		General information	04/276
	AYBN	General purpose terminal blocks	04/278
	AYBS	High quality terminal blocks	04/279
	LT4D	Channel mounted type terminal blocks with islating switch	04/280
	SKT	Power terminal blocks	04/281
	LT2E	Rail mounted terminal blocks	04/283
	Testing Terminal TT	Testing terminals for VT and CT circuits	04/288
Command Series		CCC approved	04/289

■ Joy stick selector switches

Handle	Type	Handle	Type	Handle	Type
Ball type	**AR30A0, A5**	Ball type with lock	**AR30A1, A6**	Rubber cap type	**AR30A2, A7**
See page 04/92, 04/103	AF97-48	*See page 04/92, 04/103*	AF97-44	*See page 04/92, 04/103*	AF97-57

■ Buzzers

Sound	Type	Sound	Type	Sound	Type
Electronic sound	**DR30B5***	Magnetic sound	**DR30B0**	Electronic sound (IP54)	**DR30B8 ***
See page 04/93, 04/104	KKD08-058	*See page 04/93, 04/104*	AF96-378	*See page 04/93, 04/104*	AF96-245
Electronic sound (economy)	**DR30B6**				
See page 04/93, 04/104	KK02-17				

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

AR30 and DR30
Type number nomenclature

Joy stick selector switches

AR30A 0 N – A0A0 B
① ②③ ④ ⑤

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

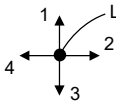
② **Handle**
0: Ball type (without lock, manual return)
1: Ball type with lock (manual return)
2: Rubber cap type (without lock, manual return)
5: Ball type (without lock, spring return)
6: Ball type with lock (spring return)
7: Rubber cap type (without lock, spring return)

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-A0A0B
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 type 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 Selector, Illuminated selector: R9551060 Pilot lights: R9551061 Joy stick selector switch: R2050803 (Lever switch) Buzzer: J9950091
TÜV: EN60947-5-1 EN60947-5-5	Emergency stop pushbutton Emergency stop illuminated pushbutton : R50028146

■ Specifications (Indoor use)

Description	Pushbutton switch Illuminated pushbutton switch Emergency stop pushbutton switch Emergency stop illuminated pushbutton switch Selector switch Illuminated selector switch	Joy stick selector (Lever switch)	Pilot light
Rated insulation voltage	600V AC/DC *1	250V AC/DC	250V AC/DC *2
Mechanical durability	*See page 04/66*	250,000 operations	–
Electrical durability	500,000 operations at 220V AC 6A 1 million operations at 220V AC 3A	100,000 operations at 220V AC 1A (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 Constant: 16.7Hz, double amplitude 3mm		
Shock	Malfunction durability: 100m/s^2 *6 Mechanical durability: 500m/s^2		Mechanical durability: 500m/s^2
Ambient temperature (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/s^2), according to the test condition of EN60947-5-5 (1998)
*6 Emergency stop type: 150m/s^2
*7 AR30Q7L and DR30D1L type: IP40

● Mechanical durability

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

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) 70dB (1m)			80dB (0.1m) 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 Constant: 16.7Hz, double amplitude 3.0mm			
Shock	Mechanical durability: 500m/s^2			
Ambient temperature	–20 to +60˚C (No condensation or no icing) (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		
	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 Pushbutton (Ring type selector switch: AR30S2R only) Emergency stop pushbutton switch Emergency stop illuminated pushbutton switch (Except the overlap contact types)	P600	1.1A	0.55A	0.2A
Overlap contact types of products shown above Pushbutton (Ring type selector switch: AR30S1R, S6R only) Selector switch (2-position only, except the overlap contact types) Illuminated selector switch (2-position only, except the overlap contact types)	Q600	0.55A	0.27A	0.1A
Pushbutton (Ring type selector switch: AR30S3R only) Selector switch (2-pos./overlap contact type, 3-, 4-, 5-pos. type) 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)	

■ Buzzers

Sound	Description	Transformer	Operating voltage	Type
Electronic sound KKD08-058	• LED operation indicator (Red) • Intermittent/continuous sound selection • Sound level: 90dB (0.1m) 70dB (1m)	Without	6V AC	**DR30B5-AB**
			6V DC	**DR30B5-6B**
			12 to 24V AC/DC	**DR30B5-EB**
			35 to 48V AC/DC	**DR30B5-FB**
		With	100 to 110V AC	**DR30B5-HB**
			200 to 220V AC	**DR30B5-MB**
		With resistor unit	100 to 110V DC	**DR30B5-1B**
Electronic sound (economy) KK02-145A	• Sound level: 90dB (0.1m) 70dB (1m)	Without	6V DC	**DR30B6-6B**
			24V AC	**DR30B6-GB**
			24V DC	**DR30B6-EB**
		With	100 to 110V AC	**DR30B6-HB**
			200 to 220V AC	**DR30B6-MB**
Magnetic sound AF96-378	• Sound level: 90dB (0.1m) 70dB (1m)	Without	100 to 110V AC	**DR30B0-HB**
			200 to 220V AC	**DR30B0-MB**
Electronic sound (IP54) AF96-245	• Intermittent/continuous sound selection • Sound level: 80dB (0.1m) 60dB (1m)	Without	6V AC	**DR30B8-AB**
			6V DC	**DR30B8-6B**
			12 to 24V AC/DC	**DR30B8-EB**
			35 to 48V AC/DC	**DR30B8-FB**
		With	100 to 110V AC	**DR30B8-HB**
			200 to 220V AC	**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 *04/104*. page, and select as follows:
• Short-circuit terminal mounted ⟶ Intermittent sound
• Short-circuit terminal not mounted ⟶ Continuous sound

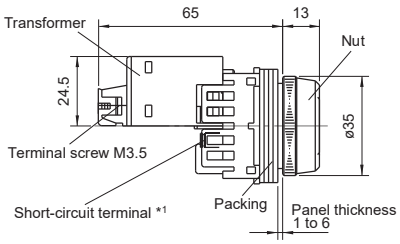
AR30 and DR30
Dimensions

■ Dimensions, mm

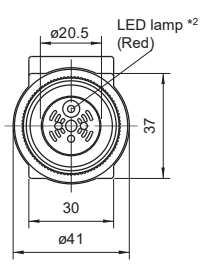
● Buzzers

Electronic sound

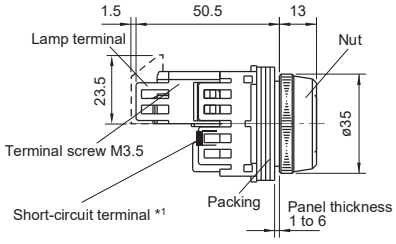
With transformer



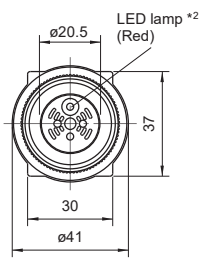
DR30B5, B6



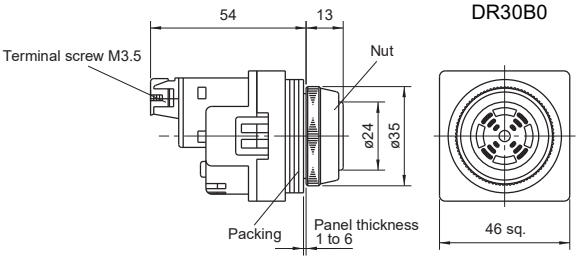
Without transformer



DR30B5, B6



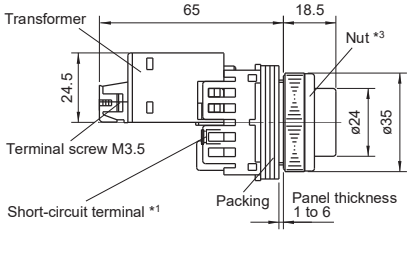
Magnetic sound



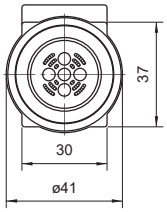
DR30B0

Electronic sound (IP54)

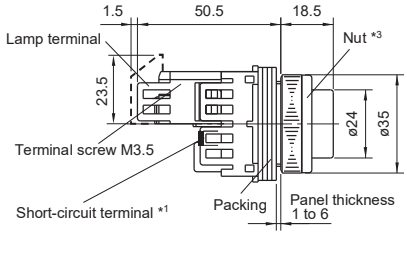
With transformer



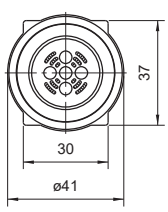
DR30B8



Without transformer



DR30B8

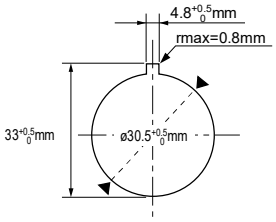


Notes: *1 There are no short-circuit terminals with DR30B6. (Continuous sound only)
*2 There are no LED lamps with DR30B6.
*3 The nut and cap are united with DR30B8.

Notes on use

■ Panel cutout hole

Fig. 1 Panel cutout hole dimensions, mm

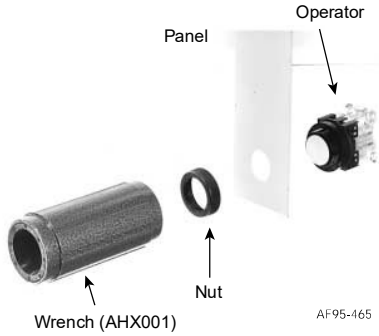


Note : If key-washer or legend plate are not used, 4.8mm-wide. location holes shown in Fig. 1 need not be cutout.

■ 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.

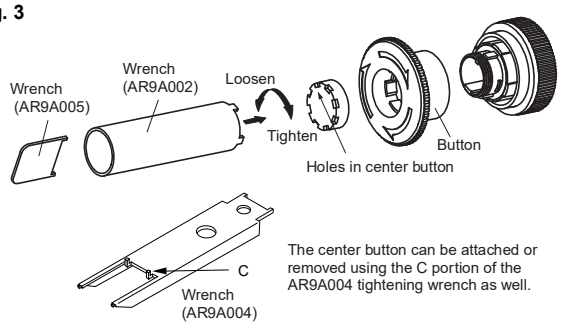
Fig. 2 Pushbutton with a round bezel



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

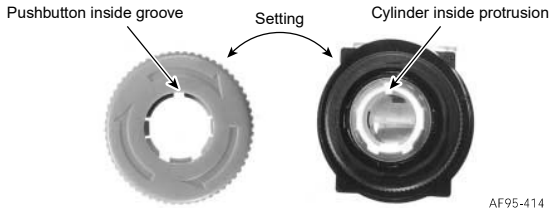
2. AR30V0R, V0L, V2R, V2L, V5R, V5L
(1) The button is removed after loosening the center button by inserting the end of the AR9A002 tightening wrench or the AR9A005 wrench (enclosed with pushbutton) into the holes in the center button and turning counterclockwise, as shown in Fig.3.
(2) Attach the operator in the same manner as described in step 1.

Fig. 3



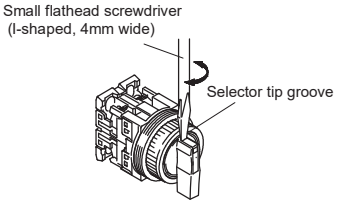
Insert the operator into the cutout hole from the back of the panel, and as shown in Fig.4, insert the pushbutton into the operator cylinder while aligning the grooves inside the pushbutton with the protrusions on the operator.

Fig. 4 Setting pushbutton to operator cylinder



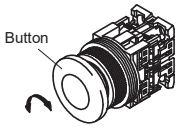
3. AR30WR, WCR
(1) As shown in the following figure, insert the tip of a flathead screwdriver into the selector tip groove. Rotate the screwdriver in the direction indicated by the arrow until the selector tip rises, and draw out the knob.
(2) Attach the operator in the same manner as described in step 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



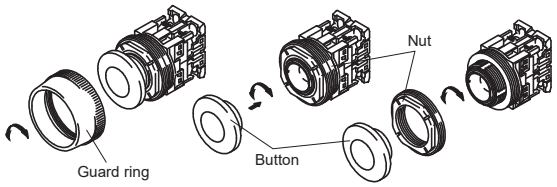
4. AR30M0R, M4R, M5R, B0R, Q7L
(1) Loosen the button by hand.
(2) Attach the operator in the same manner as described in step 1.
(3) Screw in the button by hand, making sure that the button is screwed in all the way. (Recommended tightening torque: 0.3 to 0.5 N•m)

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)

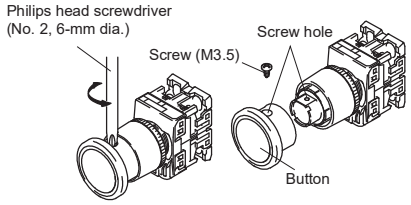
Fig. 7



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

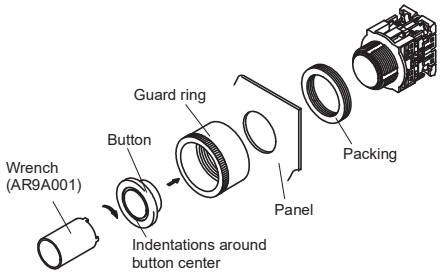
Fig. 8



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)

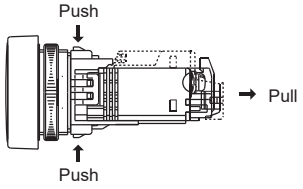
Fig. 9



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)

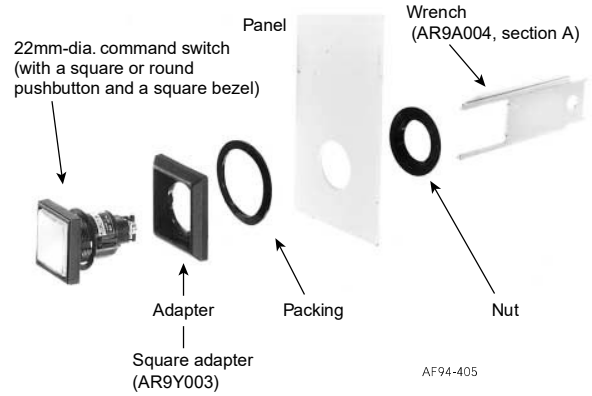
Fig. 10



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



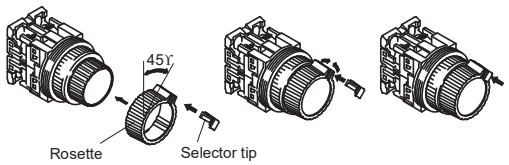
Note : • Recommended tightening torque is from 1 to 1.5N•m.
• Panel thickness: 2.5 to 5mm

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

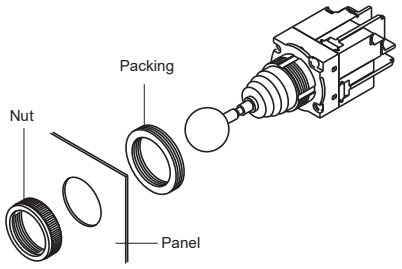
(1) Attach the operator in the same manner as described in step 1.
(2) Attach the rosette assembly to the operator.
(3) Pressing the rosette from the directions indicated by the arrows, insert the selector tip in the groove.
(4) Make sure that the selector tip is inserted completely.
(5) To remove the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

Fig. 12



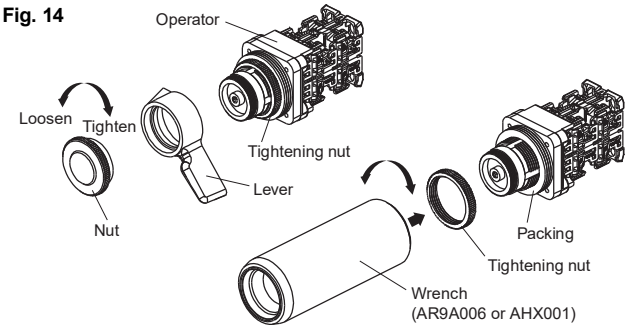
11. AR30A (joy stick selector)
(1) Remove the clamp ring as shown in the following figure.
(2) Attach the operator in the same manner as described in step 1.
Note: Even if a lock type is used, remove the clamp ring in the same manner.

Fig. 13



12. AR30HR
(1) The lever is removed after loosening the nut by hand.
(2) Loosen and remove the tightening nut by hand.
(3) Insert the operator into the cutout hole from the back of the panel, and tighten the tightening nut with the AHX001 wrench or AR9A006 wrench from the front of panel to secure the operator as shown in Fig. 14.
(Recommended tightening torque : 1.5 to 2.5N • m)
(4) Attach the lever assembly to the operator.
(5) Screw in the nut by hand, making sure that it is screwed in all the way.

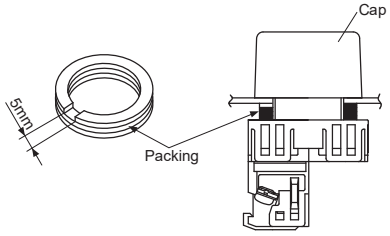
Fig. 14



■ Water-proof and dust-proof cap
Applicable type: Water-proof cap AHX052
Dust-proof cap AHX032, 033, 034, 113, 157

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. 15



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.

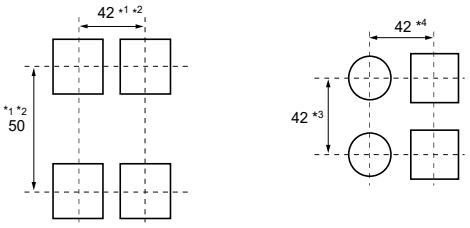
Panel thickness vs. number of packings (reference data)

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. 16)

Fig. 16

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

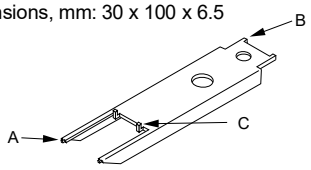


Notes: *1 AR30M3R, M8R, GSR: 55mm
*2 AR30B□R, GPR, V1R: 80mm

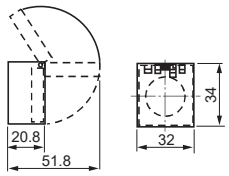
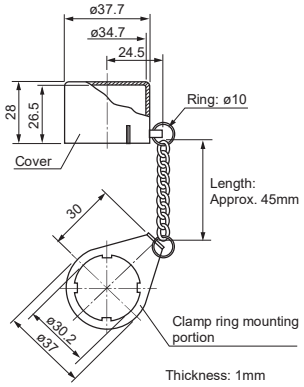
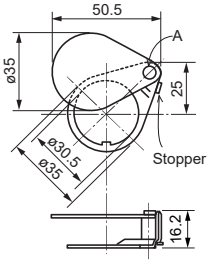
Type	*3	*4
F4M	34	34
F4N (Vertical lengthwise mounting)	40	34
(Horizontal lengthwise mounting)	34	40
M4M	40	40
Pilot lights short-body with transformer	50	42
Pilot lights with resistor	80	42

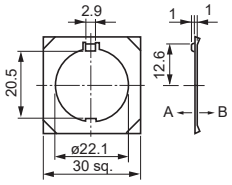
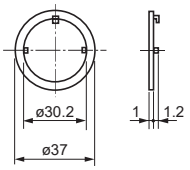
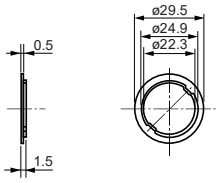
Other items are the same as for the AR22 and DR22 series, *see page 04/50 to 04/54*.

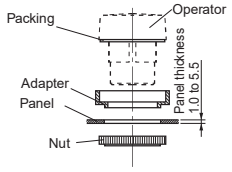
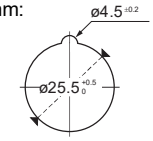
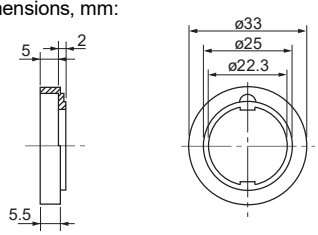
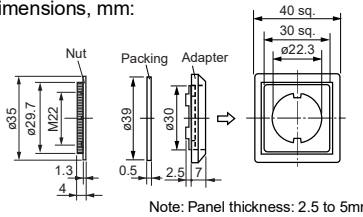
■ Accessories

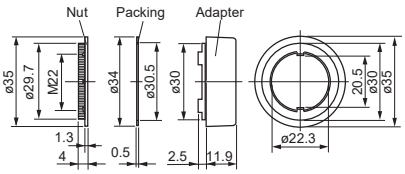
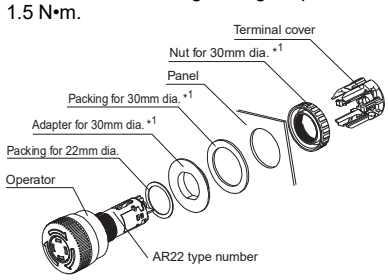
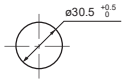
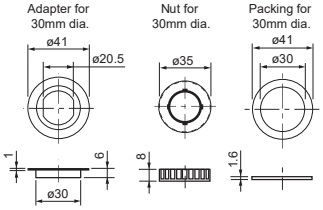
Description	Type
Wrench KK02-261	**AR9A004** Dimensions, mm: 30 x 100 x 6.5  Remarks Section “A” Use this section to tighten the nut for mounting the operator on a panel. Section “B” Use this section to tighten or remove the lens. Applicable type: AR22F0L, F5L, E0L, E5L, F0P, F5P, E0P, E5P AR22G1L, G2L,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

Description	Type
Wrench (for center button) AF93-6	**AHX8003** Dimensions, mm: ø14 x 50 Attaching and removing the center button of the AR22VGF type.
Wrench for AR22,30 and DR22, 30 For ø30 For ø22 AF96-241	**AR9A006** Dimensions, mm: ø40 x 100 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. The wrench with an inside rubber-lining can be easily used with either your right or left hand.
Wrench for AR30, DR30 AF95-467	**AHX001** Dimensions, mm: ø47 x 100 To mount an AR30 or DR30 command switch to a panel, use this wrench to tighten the nut securely.
Special tool AHX321 SG-873 DR9A321-T AF95-21	**AHX321** Dimensions, mm: 42 x 130 x 6.5 For all types except pilot lights **DR9A321-T** Dimensions, mm: 57 x 130 x 30 For pilot lights • This tool is used to remove contact blocks and transformer units. • The AHX321 can remove round color lens of switches.
Wrench/Lamp changer SI-1030	**AHX702** Dimensions, mm: ø36 x 55 Use this wrench to tighten or remove the lens and lamp. Used with: Lens of DR22D0L, K0L and DR30D0L, K0L Incandescent lamp of pilot lights and illuminated pushbuttons
Lamp changer For BA9S/13 lamp For E12/15 lamp AF95-22	**AHX790** Dimensions, mm: ø14 x 55 • Use this rubber wrench for mounting or removing lamps from pilot lights and illuminated pushbutton switches. • This wrench can be used for both LED and incandescent lamps. • 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). • For 30mm dia. pilot lights with resistor, this tool can also be used to attach or remove incandescent lamps.

Description	Type
Protection cover AF95-29	**AR9E760** This cover protects against accidental operation. The cover lid is returned home with a spring force. (Packing is provided) Used with: AR22F0L, F5L, E0L, E5L, F0M, F5M, E0M, E5M, F0P, F5P, E0P, E5P AR22F0R, F5R, E0R, E5R, F0S, F5S, E0S, E5S, E0Y, E5Y, F0Y, F5Y, FAR, FBR, EAR, EBR Dimensions, mm: 
Cover for preventing operating errors with 30mm dia. types AF91-671	**AR9E538** Inadvertent operation can be prevented by fitting a transparent cover with chain in the clamp ring. Used with: AR30F0R, F5R, E0R, E5R, E0L, E5L Dimensions, mm: 
Cover for preventing operating errors with 30mm dia. types .AF93-420	**AHX408** This is a metallic cover for preventing inadvertent operation. Used with: AR30F0R, F5R Dimensions, mm:  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. The material is steel (zinc plated).

Description	Type
Key washer for AR22, DR22 AF95-25	**AR9Y715** Use this metal washer when securing a operator in a 22.3mm dia. panel cutout hole. Dimensions, mm:  • 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). • 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 SC-1016	**AHX082** Use this metal washer when securing an operator in a 30.5mm dia. panel cutout hole. Dimension, mm: 
Operator base cover AF95-26	**AR9Y002** 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 .AF95-28	**AR9Y718** Use this resin adapter to mount the AR22/DR22 (switch/pilot light) in a 25.5mm dia. cutout hole on a panel. Dimensions, mm: 

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

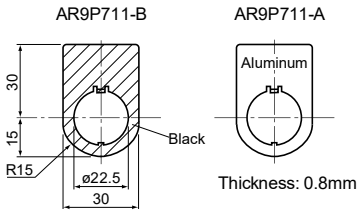
Description	Type
Round-frame adapter for 30mm dia. types	**AR9Y004** By using this adapter in combination with the round type 22mm dia. command switch, the 22mm dia. command switch can be used as a 30mm dia. command switch/ round frame type. Used with: AR22, DR22 round types (except for M3R, M8R,VG□, Joy stick selectors, buzzers) Dimensions, mm  KK02-100A Note: Panel thickness: 2.5 to 5mm
Round-frame adapter for 30mm dia. type VG	**AHX958** 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. • The washer and nut (22.3mm dia.) originally attached to the operator will not be used, so remove them. • 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. • 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.  *1 Adapter for 30mm dia. (AHX958) Panel cutout, mm:  Dimensions, mm:  AF93-4 Note: Panel thickness: 1 to 6mm

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

SI-1033

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:



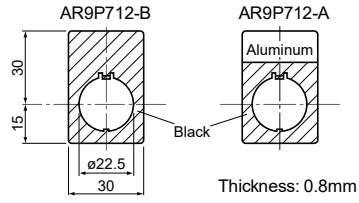
Thickness: 0.8mm

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

SI-1032

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:



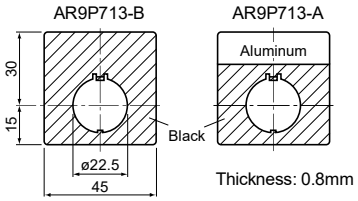
Thickness: 0.8mm

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

AF95-114

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

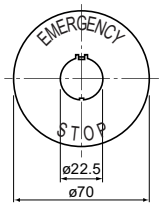
Description	Type
Legend plate for AR22 emergency stop	**AR9P719-**①② Plate color: Yellow Letter color: Black This aluminum legend plate is for a 22.3mm dia. panel cutout hole. (Packing provided)

KK02-265A

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:

AR9P719

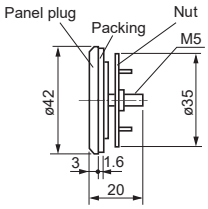


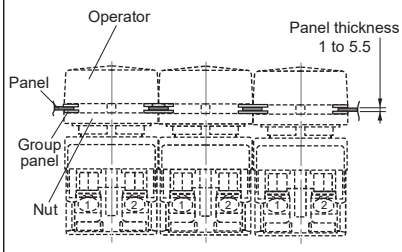
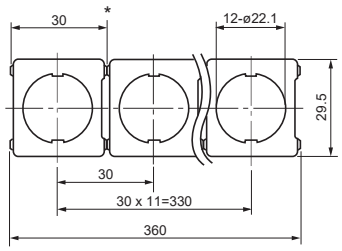
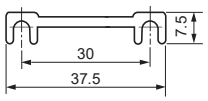
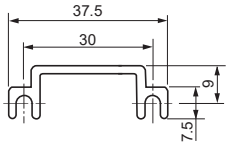
Thickness: 0.8mm

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 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: AR9P015 AR9P014 Thickness: 0.6mm
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 Dimensions, mm: AR9P009 AR9P011 AR9P007

Description	Type
Legend plate for AR30	**AHX177-**①②③④ This legend plate is for a 30.5mm dia. panel cutout hole. ① Material and color Code Material Color S Brass Silver B Aluminum Black A Aluminum 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 Dimensions, mm: AHX177 AHX177B AHX177-BS AHX177A AHX177-AS Thickness: 0.6mm
Legend plate for AR30 emergency stop	**AHX720-**①② This aluminum legend plate is for a 30.5mm dia. panel cutout hole. Plate color: Yellow Letter color: Black Legend Code ① ② Letter hight Blank 0 0 – EMERGENCY STOP 5 A 7mm Dimensions, mm: Thickness: 0.8mm Note: Engraving for making letters is not available.

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

Description	Type
Group panel for 22mm dia. type AF97-233	**DR9Y004** 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 (*)). Mounting, mm: (example showing a group of three)  Dimensions, mm:  Thickness: 0.8mm
Jumper AF95-153 AF95-27	**APCX029** (For pilot light without transformer) **DR9Y001** (For pilot light with transformer) Use this jumper to connect terminals allocated in a 30mm pich. Rated current is 3A Dimensions, mm: APCX029  DR9Y001  Thickness: 0.5mm