



# Handles and hand levers

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### Handles

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### Additional information

This catalogue shows the product in the most standard configurations.  
Please contact our Sales Dpt. for more detailed information or special requests.

### WARNING!

All specifications of this catalogue refer to the standard product at this date.  
Walvoil, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

**WALVOIL IS NOT RESPONSIBLE FOR ANY DAMAGE CAUSED BY AN  
INCORRECT USE OF THE PRODUCT.**

2<sup>nd</sup> edition March 2015

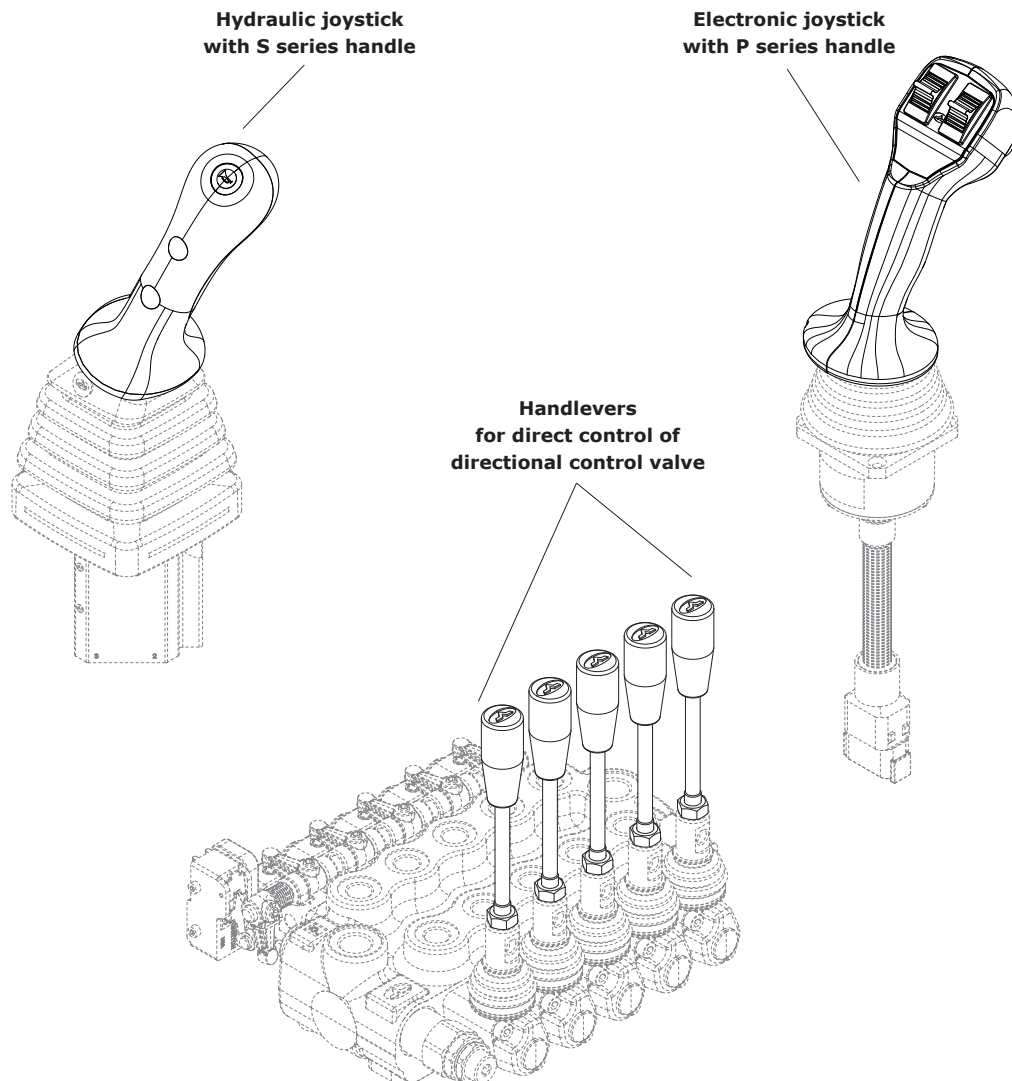
## System description

Walvoil offers a wide range of handles and handlevers, designed to ensure maximum reliability and comfort thanks to their ergonomic profile and high versatility.

The Walvoil handles are designed to be mounted on the range of control devices such as hydraulic and electronic joysticks and remote controls for flexible cable.

Depending on the model, they can be configured with on/off devices (eg. push-buttons, rocker switches), proportional devices (eg. rollers), and LED signal.

Handlevers line allows to satisfy all Walvoil directional valve range; they are available with several shapes and lengths, with or without microswitches.



General features		P series	H series	S series	V series	J series	10 series
ON/OFF* functions	push-button	8	8	4	1	1	1
	rocker switch	2	2	-	-	1	1
Proportional functions*		2	1	1	-	-	-
Dead man		•	•	-	-	-	-
Max. current rating		16 A	7A	7A	4A	6A	6A

(\*) Max. number of functions

# Handles and handlevers

## Joists-handle table

Joint		Handle								
Type	Description	Code	tightening on handle wrench/ tightening torque	tightening on pilot control valve wrench/tightening torque	P series	H series	S series	V series	J series	10 series
3	SVM100	5GIU714763	22 mm/32 Nm <i>0.87 in /23.6 lbft</i>	24 mm/24 Nm <i>0.94 in /17.7 lbft</i>	•	•	-	•	-	•
4	For SCF031	5AST281416	22 mm/32 Nm <i>0.87 in /23.6 lbft</i>	22 mm/32 Nm <i>0.87 in /23.6 lbft</i>	•	•	-	•	-	•
7	For SVM400-SVM400EMD-SVM430-SVM450-SVM600 sloping 19° left	5GIU714563	22 mm/24 Nm <i>0.87 in /17.7 lbft</i>	22 mm/60 Nm <i>0.87 in /44.2 lbft</i>	•	•	•	•	-	-
8	For SVM400-SVM400EMD-SVM430-SVM450-SVM600 sloping 19° right	5GIU714563	22 mm/24 Nm <i>0.87 in /17.7 lbft</i>	22 mm/60 Nm <i>0.87 in /44.2 lbft</i>	•	•	•	•	-	-
9	For SVM400-SVM400EMD-SVM430	5PER524701	24 mm/24 Nm <i>0.94 in /17.7 lbft</i>	20 mm/24 Nm <i>0.79 in /17.7 lbft</i>	•	•	•	•	-	•
E	For SVM400-SVM400EMD-SVM430 sloping 30° left	5GIU715630	22 mm/22 Nm <i>0.87 in /16.23 lbft</i>	20 mm/60 Nm <i>0.79 in /44.2 lbft</i>	•	•	•	•	-	-
F	For SVM400-SVM400EMD-SVM430 sloping 30° right	5GIU715630	22 mm/22 Nm <i>0.87 in /16.23 lbft</i>	20 mm/60 Nm <i>0.79 in /44.2 lbft</i>	•	•	•	•	-	-
G	For SVM400EMD	5GIU714501	22 mm/24 Nm <i>0.87 in /17.7 lbft</i>	30 mm/42 Nm <i>1.18 in /30.98 Nm</i>	•	•	•	•	-	-
H	For SVM400-SVM400EMD-SVM430 sloping 19° forward	5GIU714563	22 mm/24 Nm <i>0.87 in /17.7 lbft</i>	22 mm/60 Nm <i>0.87 in /44.2 lbft</i>	•	•	•	•	-	-
I	For SVM400-SVM400EMD-SVM430 sloping 19° reverse	5GIU714563	22 mm/24 Nm <i>0.87 in /17.7 lbft</i>	22 mm/60 Nm <i>0.87 in /44.2 lbft</i>	•	•	•	•	-	-
L	For SVM400-SVM400EMD-SVM430 sloping 30° forward	5GIU715630	22 mm/22 Nm <i>0.87 in /16.23 lbft</i>	22 mm/60 Nm <i>0.87 in /44.2 lbft</i>	•	•	•	•	-	-
M	For SVM400-SVM400EMD-SVM430 sloping 30° reverse	5GIU715630	22 mm/22 Nm <i>0.87 in /16.23 lbft</i>	22 mm/60 Nm <i>0.87 in /44.2 lbft</i>	•	•	•	•	-	-
-	For SVM100-SVM150	5AST271217	-	19 mm/manual <i>0.75 in /manual</i>	-	-	-	-	•	-

## For control devices not included in the catalogue

Joint		Handle								
Type	Description	Code	tightening on handle wrench/ tightening torque	tightening on pilot control valve wrench/tightening torque	P series	H series	S series	V series	J series	10 series
1	For SV01	5PER524700	22 mm/32 Nm <i>0.87 in /23.6 lbft</i>	24 mm/24 Nm <i>0.94 in /17.7 lbft</i>	•	•	-	•	-	•
3	For SV10	5GIU714763	22 mm/32 Nm <i>0.87 in /23.6 lbft</i>	24 mm/24 Nm <i>0.94 in /17.7 lbft</i>	•	•	-	•	-	•
5	For SV01 sloping 19° left	5GIU715600	22 mm/24 Nm <i>0.87 in /17.7 lbft</i>	22 mm/60 Nm <i>0.87 in /44.2 lbft</i>	•	•	-	•	-	-
6	For SV01 sloping 19° right	5GIU715600	22 mm/24 Nm <i>0.87 in /17.7 lbft</i>	22 mm/60 Nm <i>0.87 in /44.2 lbft</i>	•	•	-	•	-	-
C	For MDT	5GIU127381	2,5 mm/manual <i>0.1 in /manual</i>	-	•	•	-	•	-	-



## P series handles

- Ergonomic design
- High resistance thermoplastic resin
- Available with different proportional and ON/OFF functions
- Available with or without "dead man" trigger

### General features

Body, shell and plate material	Nylon® - MZN
IP weather protection (assembled)	depending on configuration
Ambient temperature	from -20°C to 60°C / from -4°F to 140°F
UV resistance	according to IEC68-2-5, S test C procedure

### Electric device features

#### ON/OFF push button

Version	spring return
Contact type	normally open
Current rating	2 A resistive load @ 12 VDC
Mechanical life (nr. of operations)	10 <sup>6</sup>
Electric life (nr. of operations)	200x10 <sup>3</sup>
Weather protection	IP64



#### "Dead man" trigger

Version	spring return
Contact type	NA
Current rating	2 A resistive 12 V
Mechanical life (nr. of operations)	10 <sup>6</sup>
Electric life (nr. of operations)	200x10 <sup>3</sup>
Weather protection	IP67



#### ON/OFF push button with detent

Version	with detent
Contact type	NA
Current rating	200 mA @ 12 VDC
Mechanical life (nr. of operations)	10 <sup>6</sup>
Electric life (nr. of operations)	5x10 <sup>5</sup>
Weather protection	IP67



#### Proportional roller

Supply	8-32 VDC
Max. current consumption	< 24 mA
Max. output current	1 mA
Output signal (range)	0.5 - 4.5 V
Output signal (central position)	2.5V
Signal tolerance (central position and stroke end)	±100 mV
Minimum load	10 Ω
Actuator deflection angle	± 35° (±1°)
Mechanical life (nr. of operations)	10 <sup>6</sup>
Operating force	2 N
Mechanical vibration	IEC 68-2 EN 60068-2-29
Mechanical shock	(pulse 400m/s <sup>2</sup> x 6 ms, 100 times)
Weather protection	IP67-IP69K
EMC compatibility	ISO 13766 ISO 14982



#### Rocker switch

Version	with detent
Contact type	on/off/on
Current rating	2 A resistive @ 12 VDC
Mechanical life (nr. of operations)	10 <sup>5</sup>
Electric life (nr. of operations)	200x10 <sup>3</sup>
Weather protection	IP68



#### FNR rocker switch

Version	with detent
Contact type	on/off/on
Current rating	2 A resistive @ 12 VDC
Mechanical life (nr. of operations)	10 <sup>6</sup>
Weather protection	IP67



#### LED

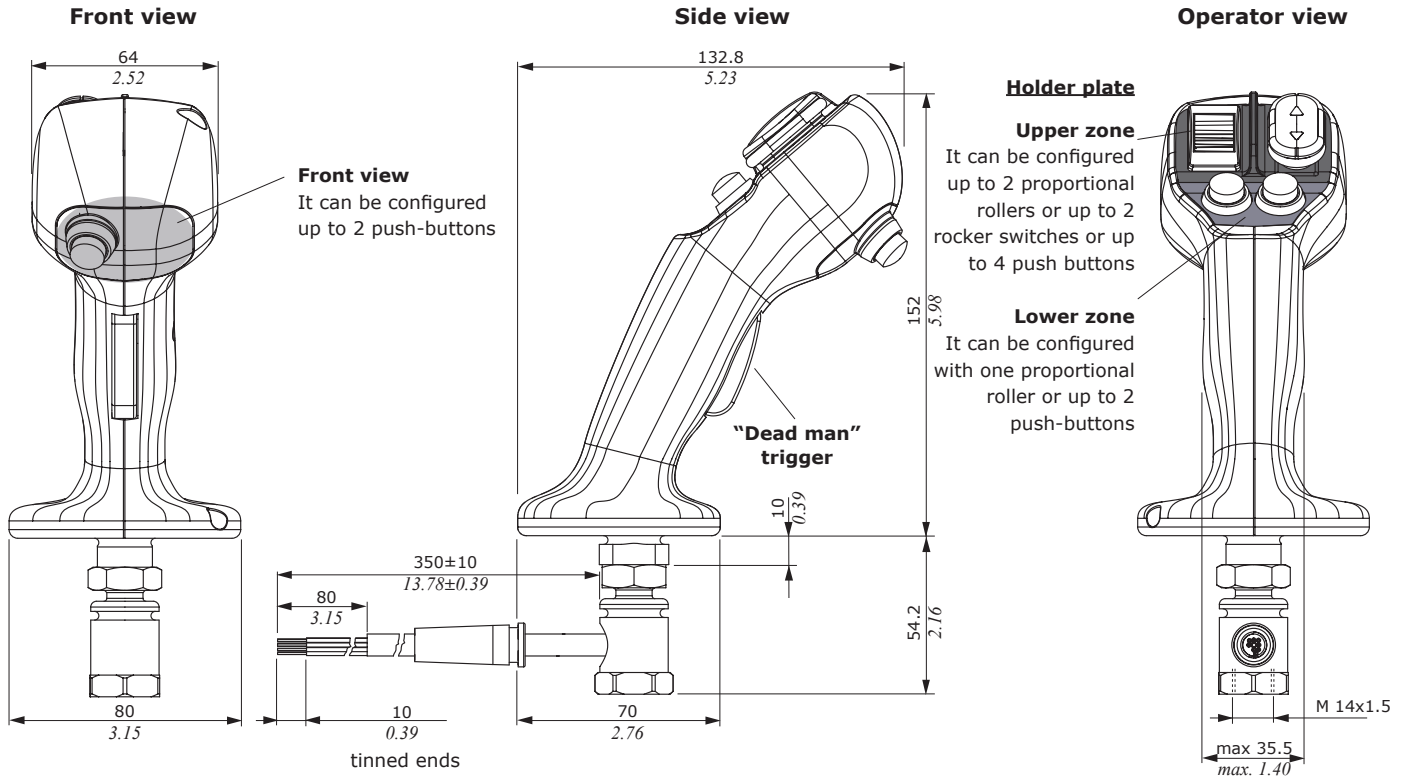
Supply voltage (max.)	12V 10 mA
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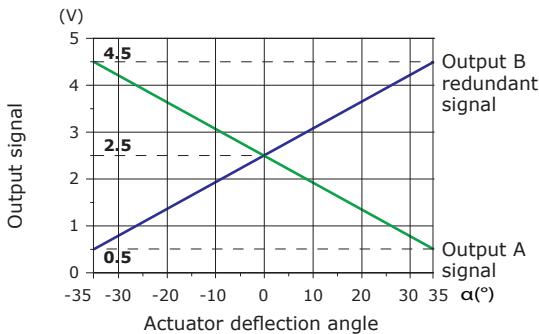
#### Cables

Conductor material	copper with tinned ends
Nr. of conductors	up to 12
Conductor section	from AWG16 to AWG20
Insulating material	PVC
Protective covering material	fireproof polyurethane

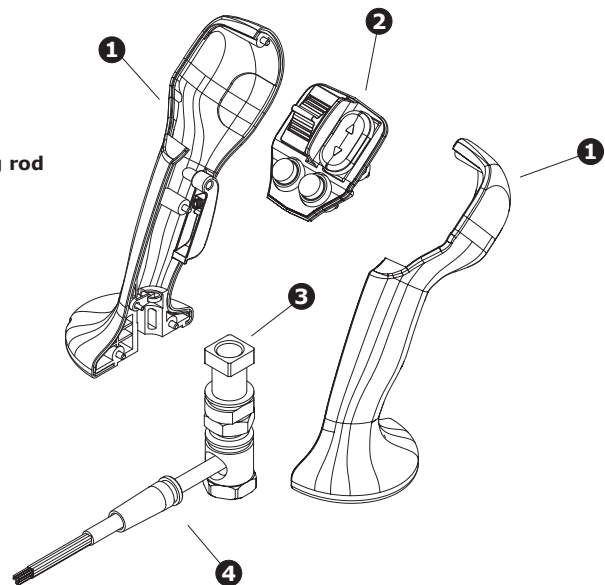
### Dimensions



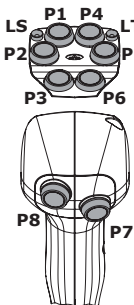
**Proportional roller output detail**



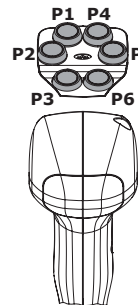
- 1) Half-shell
- 2) Hold plate
- 3) Assembling rod
- 4) Cable



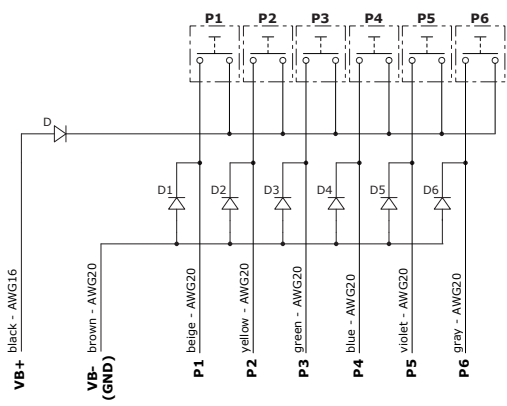
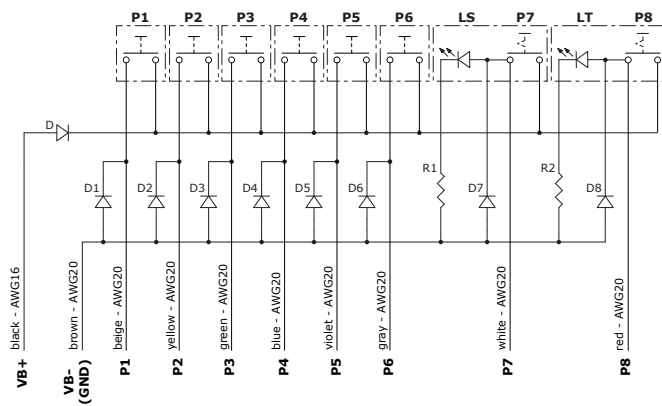
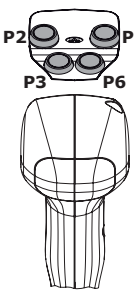
Without "dead man" trigger



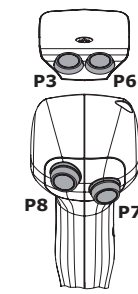
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Holder plate	6 push-buttons with spring return (P1... P6), 2 LEDs (LS-LT)
Front zone	2 detent push-buttons (P7-P8)
Joint	Standard for SVM400-430 joystick



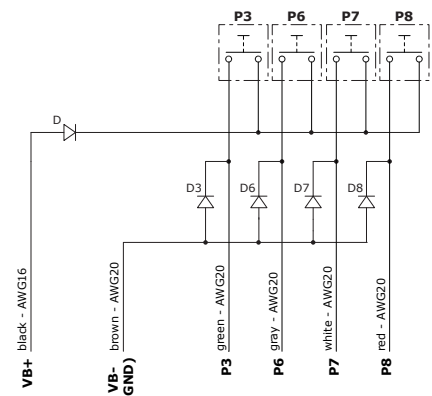
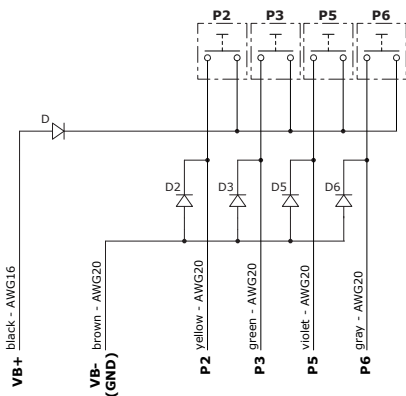
Code	<b>2IM8010032</b>
Description	PTB6000A9-1R1D035-2R1D035-3R1D035-4R1D035-5R1D035-6R1D035
Holder plate	6 push-buttons with spring return (P1... P6)
Front zone	-
Joint	Standard for SVM400-430 joystick

Code	<b>2IM8010033</b>
Description	PTB4000A9-2R1D035-3R1D035-5R1D035-6R1D035
Holder plate	4 push-buttons with spring return (P2-P3-P5-P6)
Front zone	-
Joint	Standard for SVM400-430 joystick



Code	<b>2IM8020008</b>
Description	PTC2000C9-3R1D035-6R1D035-7R1D035-8R1D035
Holder plate	2 push-buttons with spring return (P3-P6)
Front zone	2 push-buttons with spring return (P7-P8)
Joint	Standard for SVM400-430 joystick



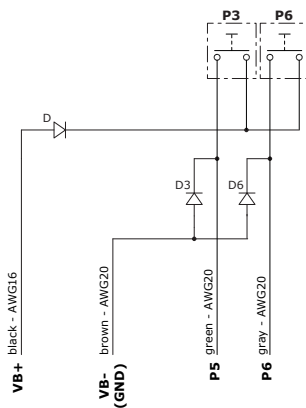
NOTE - For different joint see page 4.  
For different handle configurations, contact our Sales Dept.

### Configurations

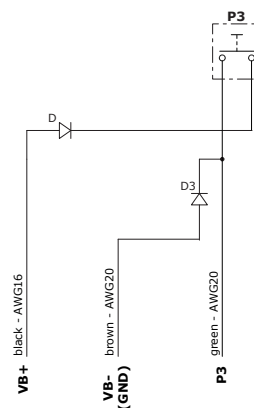
#### Without "dead man" trigger



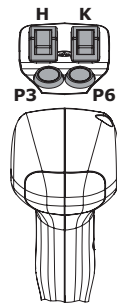
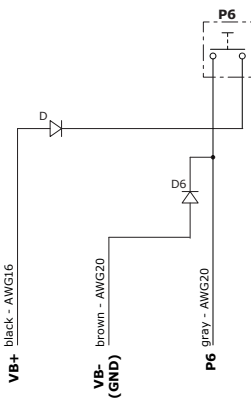
Code	<b>2IM8010034</b>
Description	PTB2000C9-3R1D035-6R1D035
Holder plate	2 push-buttons with spring return (P3-P6)
Front zone	-
Joint	Standard for SVM400-430 joystick



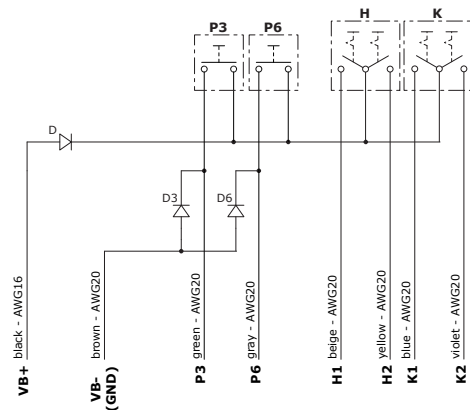
Code	<b>2IM8010035</b>
Description	PTB1000D9-3R1D035
Holder plate	1 push-button with spring return (P3)
Front zone	-
Joint	Standard for SVM400-430 joystick



Code	<b>2IM8010036</b>
Description	PTB1000A9-6R1D035
Holder plate	1 push-button with spring return (P6)
Front zone	-
Joint	Standard for SVM400-430 joystick



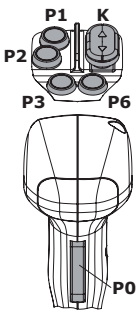
Code	<b>2IM8010037</b>
Description	PTB2020A9-3R1D035-6R1D035-HN6035-KN6035
Holder plate	2 push-buttons with spring return (P3-P6), 2 rocker switches with detent (H-K)
Front zone	-
Joint	Standard for SVM400-430 joystick



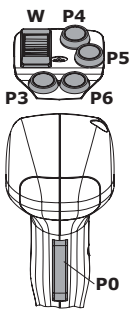
NOTE - For different joint see page 4.  
For different handle configurations, contact our Sales Dept.



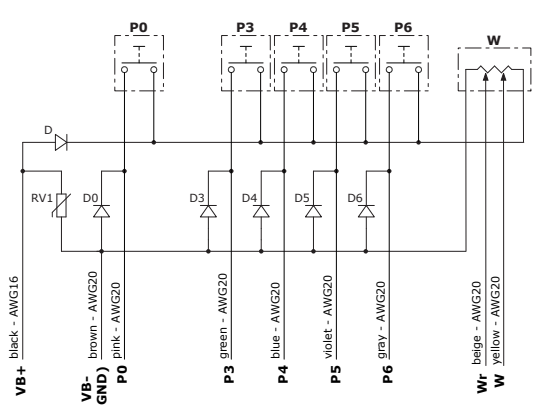
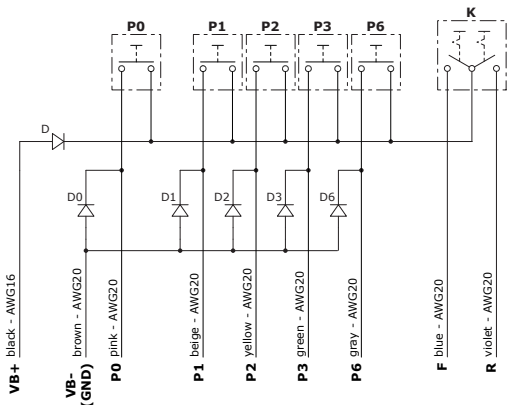
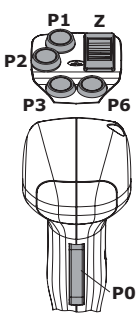
With "dead man" trigger



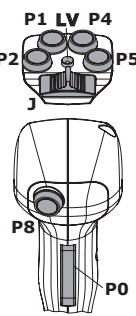
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Holder plate	4 push-buttons with spring return (P1-P2-3-P6), 1 FNR rocker switch with detent
Front zone	"Dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick



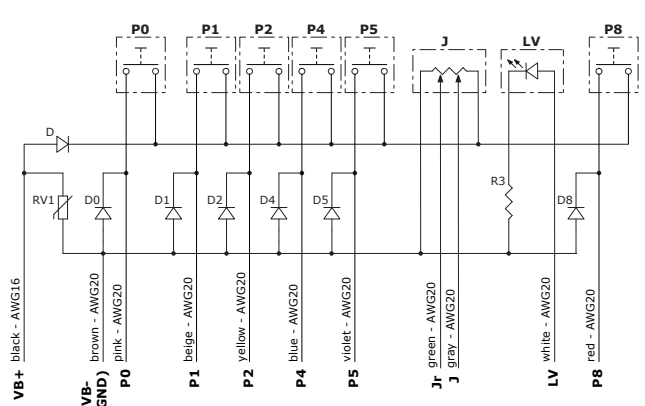
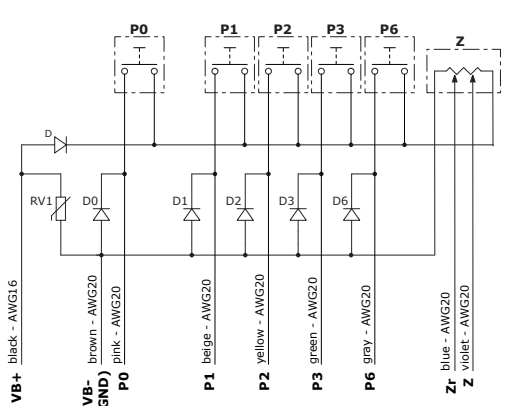
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Description	PZTA4100D9-0RD035-3R1D035-4R1D035-5R1D035-6R1D035-WN130035-(RV)
Holder plate	4 push-buttons with spring return (P3-P4-P5-P6), 1 proportional roller (W)
Front zone	"Dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick

Code	<b>2IM8600008</b>
Description	PZTA4100E9-0RD035-1R1D035-2R1D035-3R1D035-6R1D035-ZN130035-(RV)
Holder plate	4 push-buttons with spring return (P1-P2-P3-P6), 1 proportional roller (Z)
Front zone	"Dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick



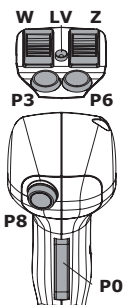
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Description	PZTM4101A9-0RD035-1R1D035-2R1D035-4R1D035-5R1D035-8R1D035-JN130035-VVL035-(12VDC)-(RV)
Holder plate	4 push-buttons with spring return (P1-P2-P4-P5), 1 proportional roller (J), 1 LED (LV)
Front zone	1 push-button with spring return (P8), "dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick



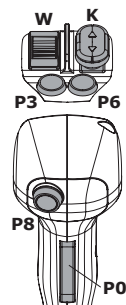
NOTE - For different joint see page 4.  
For different handle configurations, contact our Sales Dept.

### Configurations

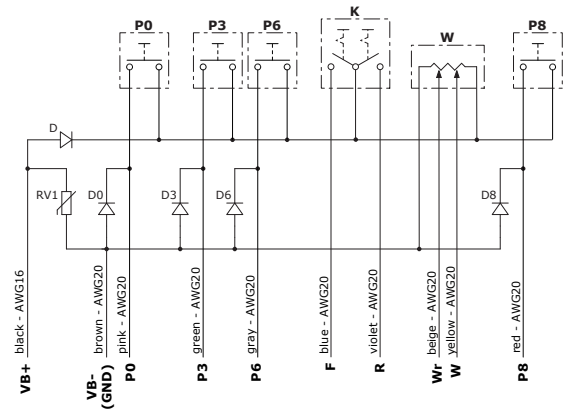
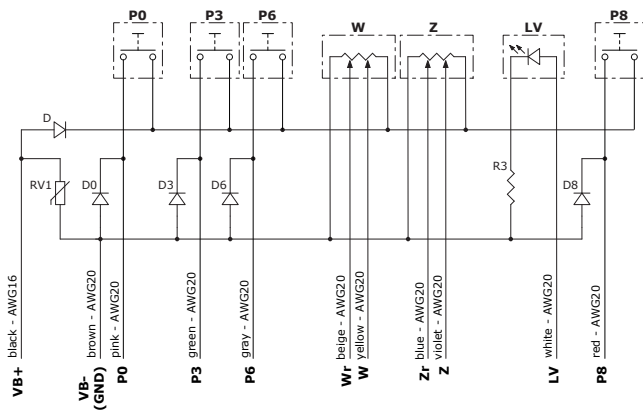
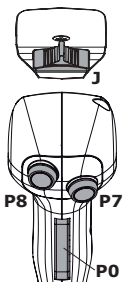
#### With "dead man" trigger



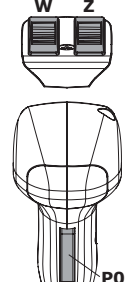
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Description	PZTM2200A9-ORD035-3R1D035-6R1D035-8R1D035-WN130035-ZN130035-VVL035-(12VDC)-(RV)
Hold plate	2 push-buttons with spring return (P3-P6), 2 proportional rollers (W-Z), 1 LED (LV)
Frontal zone	1 push-button with spring return (P8), "dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick



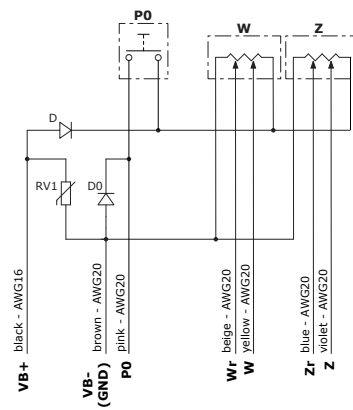
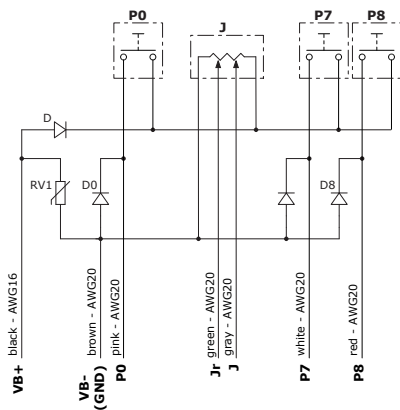
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Description	PZTM2110C9-ORD035-3R1D035-6R1D035-8R1D035-WN130035-KRS035
Hold plate	2 push-buttons with spring return (P3-P6), 1 proportional roller (W), 1 FNR rocker switch (K)
Frontal zone	1 push-button with spring return (P8), "dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick

Code	<b>2IM8550004</b>
Description	PZTK0100F9-ORD035-7R1D035-8R1D035-JN130035-(RV)
Hold plate	1 proportional roller (J)
Frontal zone	2 push-buttons with spring return (P7-P8), "dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick



Code	<b>2IM8500007</b>
Description	PZA0200B9-ORD035-WN130035-ZN130035-(RV)
Hold plate	2 proportional rollers (W-Z)
Frontal zone	"dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick



NOTE - For different joint see page 4.  
For different handle configurations, contact our Sales Dept.



## H series handle

- Ergonomic design
- Ergonomic handle made of thermoplastic material
- Available with different proportional and ON/OFF functions
- Available with or without "dead man" trigger

### General features

Shell and plate material	Nylon®
IP weather protection (mounted)	IP44
Ambient temperature	from -20°C to 60°C / from -4°F to 140°F
UV resistance	according to IEC68-2-5, S test C procedure

### Electric device features

#### H type ON/OFF push button

Version	spring return
Contact type	NA
Current rating	2 A resistive @ 12 VDC
Mechanical life (nr. of operations)	10 <sup>6</sup>
Electric life (nr. of operations)	200x10 <sup>3</sup>
Operating force	0.8 N
Weather protection	IP50



#### HT type ON/OFF push button

Version	spring return
Contact type	NA
Current rating	2 A resistive @ 12 VDC
Mechanical life (nr. of operations)	10 <sup>6</sup>
Electric life (nr. of operations)	200x10 <sup>3</sup>
Operating force	7.5 N
Weather protection	IP64



#### H type rocker switch

Version	spring return
Contact type	(on)/off/(on)
Current rating	2 A resistive @ 12 VDC
Mechanical life (nr. of operations)	200x10 <sup>5</sup>
Weather protection	IP44



#### "Dead man" trigger

Version	spring return
Contact type	NA
Current rating	2 A resistive @ 12 VDC
Mechanical life (nr. of operations)	10 <sup>6</sup>
Electric life (nr. of operations)	200x10 <sup>3</sup>
Operating force	0.8 N
Weather protection	IP50



#### Proportional roller

Supply	8-32 VDC
Max. current consumption	< 24 mA
Max. output current	1 mA
Output signal (range)	0.5 - 4.5 V
Output signal (central position)	2.5V
Signal tolerance (central position and stroke end)	±100 mV
Minimum load	10 Ω
Actuator deflection angle	± 35° (±1°)
Mechanical life (nr. of operations)	10 <sup>6</sup>
Operating force	2 N
Mechanical vibration	IEC 68-2
Mechanical shock	EN 60068-2-29 (pulse 400m/s <sup>2</sup> x 6 ms, 100 times)
Weather protection	IP67-IP69K
EMC compatibility	ISO 13766 - ISO 14982



#### Rocker switch

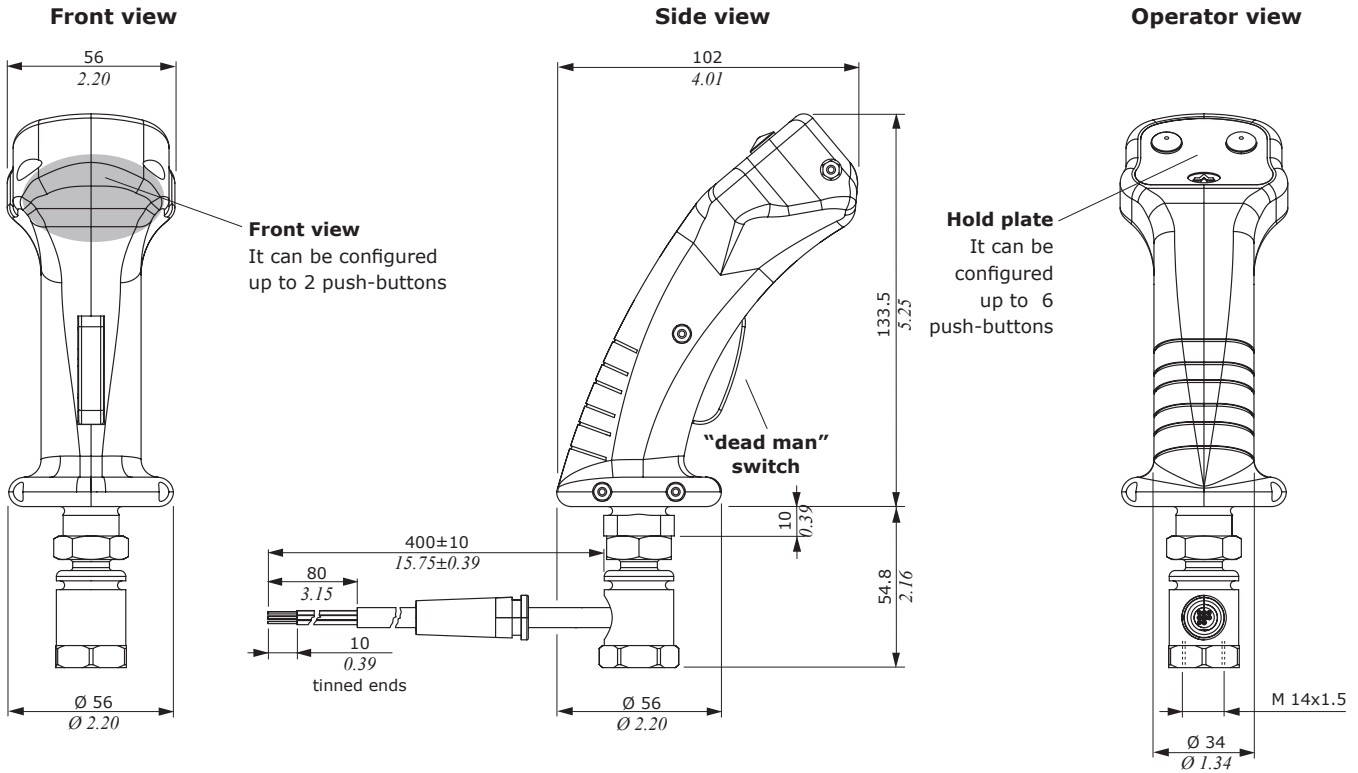
Version	with detent
Contact type	on/off
Current rating	2 A resistive @ 12 VDC
Mechanical life (nr. of operations)	10 <sup>5</sup>
Weather protection	IP44



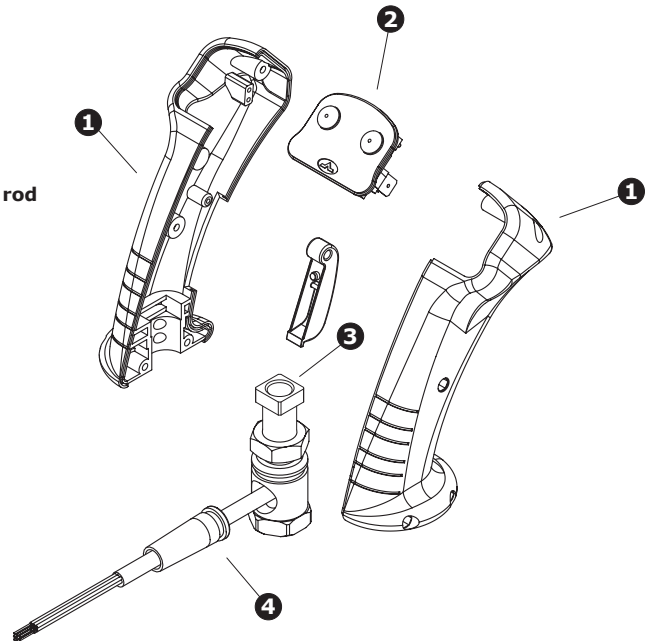
#### Cables

Conductor material	copper with tinned ends
Nr. of conductors	up to 12
Conductor section	from AWG16 to AWG20
Insulating material	PVC
Protective covering material	fireproof polyurethane

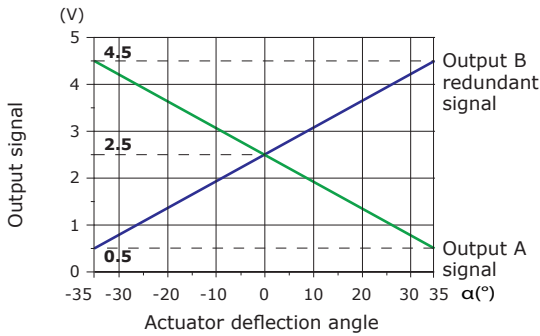
### Dimensions



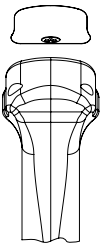
- 1) Half-shell
- 2) Hold plate
- 3) Assembling rod
- 4) Cable



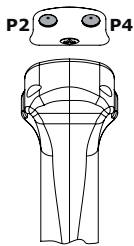
**Proportional roller output detail**



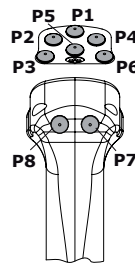
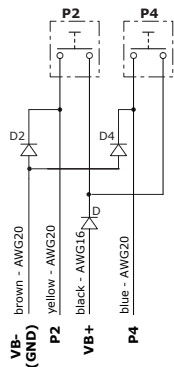
Without "dead man" trigger



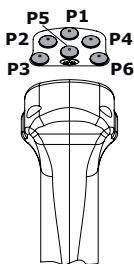
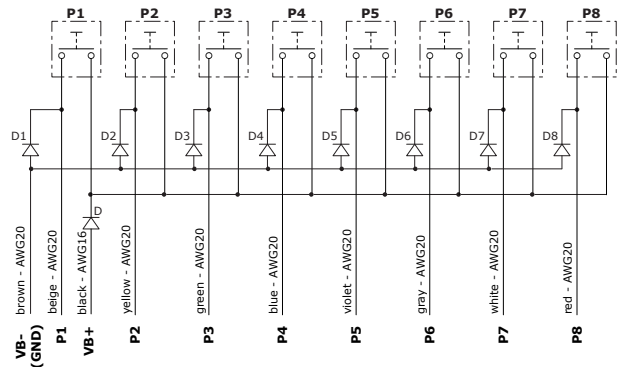
Code	<b>2IM4000213</b>
Description	HB009
Holder plate	-
Frontal zone	-
Joint	Standard for SVM400



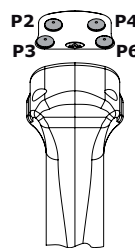
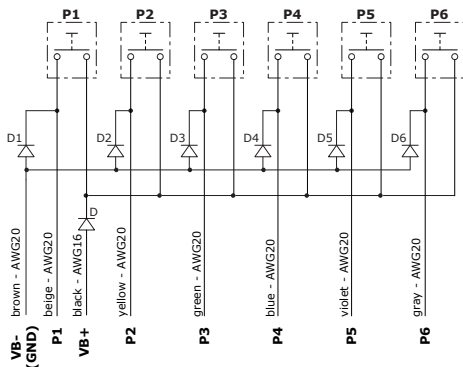
Code	<b>2IM4000235</b>
Description	HB029-2RD040-4RD040
Holder plate	2 push-buttons with spring return (P2-P4)
Frontal zone	-
Joint	Standard for SVM400-430 joystick



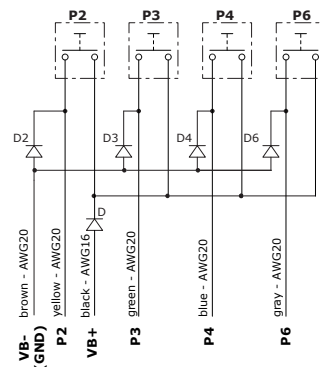
Code	<b>2IM4200017</b>
Description	HC069-1RD040-2RD040-3RD040-4RD040-5RD040-6RD040-7RD040-8RD040
Holder plate	6 push-buttons with spring return (P1...P6)
Frontal zone	2 push-buttons with spring return (P7-P8)
Joint	Standard for SVM400-430 joystick



Code	<b>2IM4000201</b>
Description	HB069-1RD040-2RD040-3RD040-4RD040-5RD040-6RD040
Holder plate	6 push-buttons with spring return (P1...P6)
Frontal zone	-
Joint	Standard for SVM400-430 joystick



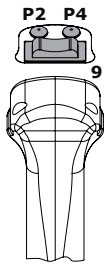
Code	<b>2IM4000221</b>
Description	HB049-2RD040-3RD040-4RD040-6RD040
Holder plate	4 push-buttons with spring return (P2-P3-P4-P6)
Frontal zone	-
Joint	Standard for SVM400-430 joystick



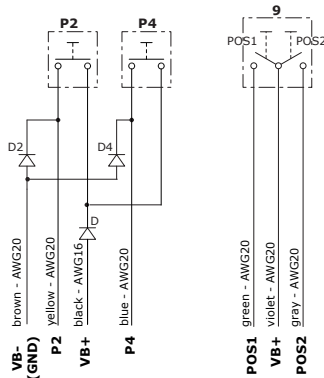
NOTE - For different joint see page 4.  
For different handle configurations, contact our Sales Dept.

## Configurations

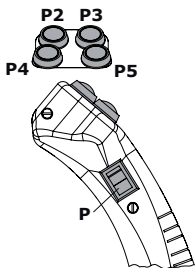
### Without "dead man" trigger



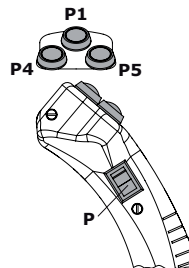
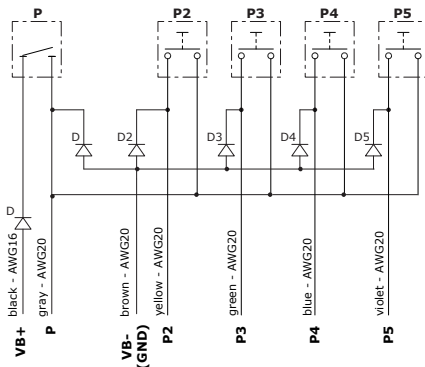
Code	<b>2IM4000145</b>
Description	HB529-2RD040-4RD040-9N040-CS
Holder plate	2 push-buttons with spring return (P1-P2), 1 rocker switch with spring return (9)
Frontal zone	-
Joint	Standard for SVM400-430 joystick



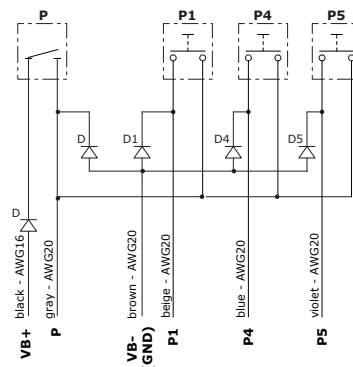
### With ON/OFF switch



Code	<b>2IM4700138</b>
Description	HTPB049-PND040-2R1D040-3R1D040-4R1D040-5R1D040
Holder plate	4 push-buttons with spring return (P2-P3-P4-P5)
Frontal zone	ON/OFF switch (P)
Joint	Standard for SVM400-430 joystick

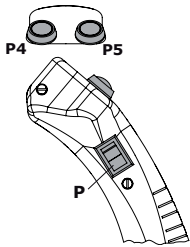


Code	<b>2IM4700139</b>
Description	HTPB039-PND040-1R1D040-4R1D040-5R1D040
Holder plate	3 push-buttons with spring return (P1-P4-P5)
Frontal zone	ON/OFF switch (P)
Joint	Standard for SVM400-430 joystick

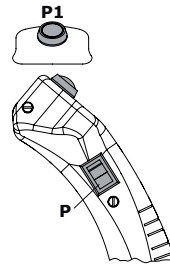
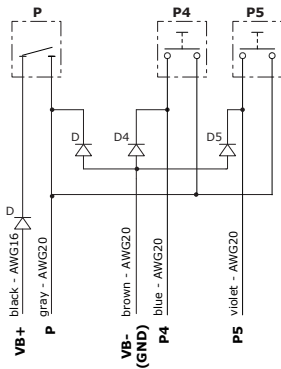


NOTE - For different joint see page 4.  
For different handle configurations, contact our Sales Dept.

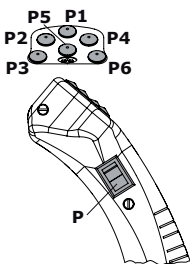
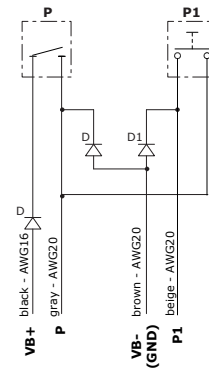
### With ON/OFF switch



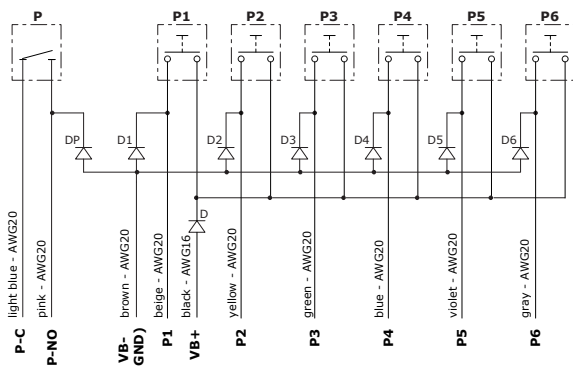
Code	<b>2IM4700140</b>
Description	HTPB029-PN040-4R1D040-5R1D040
Holder plate	2 push-buttons with spring return (P4-P6)
Frontal zone	ON/OFF switch (P)
Joint	Standard for SVM400-430 joystick



Code	<b>2IM4700141</b>
Description	HTPB019-PN040-1R2D040
Holder plate	1 push-button with spring return (P1)
Frontal zone	ON/OFF switch (P)
Joint	Standard for SVM400-430 joystick



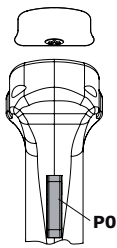
Code	<b>2IM4000309</b>
Description	HJ069-PN040-1RD040-2RD040-3RD040-4RD040-5RD040-6RD040
Holder plate	6 push-buttons with spring return (P1...P6)
Frontal zone	ON/OFF switch (P)
Joint	Standard for SVM400-430 joystick



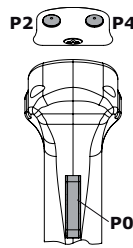
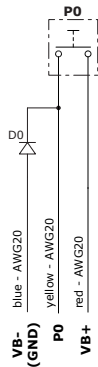
NOTE - For different joint see page 4.  
For different handle configurations, contact our Sales Dept.

### Configurations

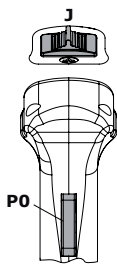
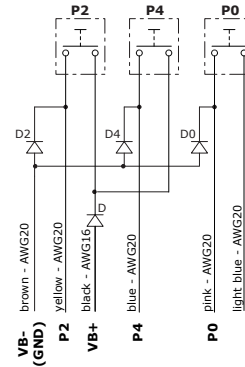
#### With "dead man" trigger



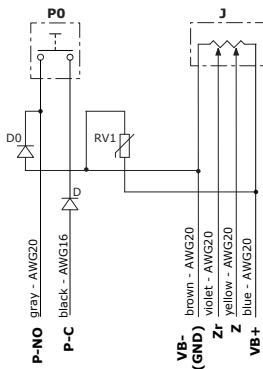
Code	<b>2IM4100075</b>
Description	HA009-ORD040
Holder plate	-
Frontal zone	"Dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick



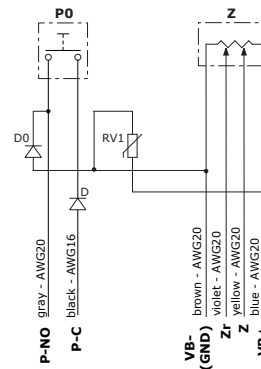
Code	<b>2IM4100109</b>
Description	HA029-ORD040-2RD040-4RD040
Holder plate	2 push-buttons with spring return (P2-P4)
Frontal zone	"Dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick



Code	<b>2IM4800022</b>
Description	HZA9-ORD040-JN130040-(RV)
Holder plate	Proportional roller (J)
Frontal zone	"Dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick



Code	<b>2IM4800023</b>
Description	HZA9-ORD040-ZN130040-(RV)
Holder plate	Proportional roller (Z)
Frontal zone	"Dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick



NOTE - For different joint see page 4.  
For different handle configurations, contact our Sales Dept.





## S series handle

- Ergonomic design
- Rubber coating
- Robust construction, reliability and weather resistance
- Proportional switch option rocker

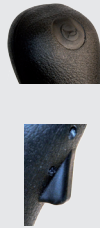
### General features

Covering material	Thermoplastic elastomer
Core material	Polyamide 6.6
IP weather protection (assembled)	IP67
Ambient temperature	from -20°C to 50°C / from -4°F to 122°F
UV resistance	according to IEC68-2-5, S test C procedure

### Electric devices features

#### Trigger and clacson push-button

Version	spring return
Contact type	NO
Current rating	7 A resistive
	4 A inductive @ 28 VDC
Mechanical life (nr. of operations)	10 <sup>6</sup>
Electric life (nr. of operations)	5x10 <sup>5</sup>
Operating force	0.8 N
Weather protection	IP50



#### Proportional roller with ratiometric signal

Supply	12VDC
Output signal (range)	3.5 - 8.5 V
Output signal (central position)	6V
Signal tolerance (central position and stroke end)	±1 %
Nominal resistance	5 KΩ
Actuator deflection angle	160° (±5°)
Mechanical life (nr. of operations)	10 <sup>7</sup>



#### ON/OFF push-button

Version	Spring return
Contact type	NO
Current rating	5 A resistive
	3 A inductive @ 28 VDC
Mechanical life (nr. of operations)	10 <sup>6</sup>
Electric life (nr. of operations)	25x10 <sup>3</sup>
Weather protection	IP64



#### Proportional roller (ARW)

Supply	8-32 VDC
Max. current consumption	< 24 mA
Max. output current	1 mA
Output signal (range)	0.5 - 4.5 V
Output signal (central position)	2.5V
Signal tolerance (central position and stroke end)	±100 mV
Minimum load	10 Ω
Actuator deflection angle	± 35° (±1°)
Mechanical life (nr. of operations)	10 <sup>6</sup>
Operating force	2 N
Mechanical vibration	IEC 68-2
Mechanical shock	EN 60068-2-29 (pulse 400m/s <sup>2</sup> x 6 ms, 100 times)
Weather protection	IP67-IP69K
EMC	ISO 13766 - ISO 14982



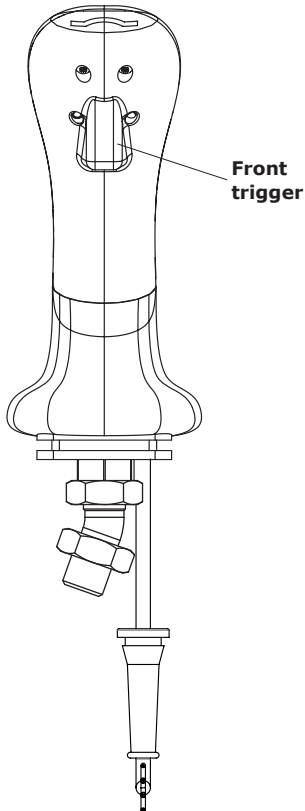
#### Cables

Conductor material	copper with tinned ends
Conductor section	AWG18
Insulating material	PVC
Protective covering material	PVC

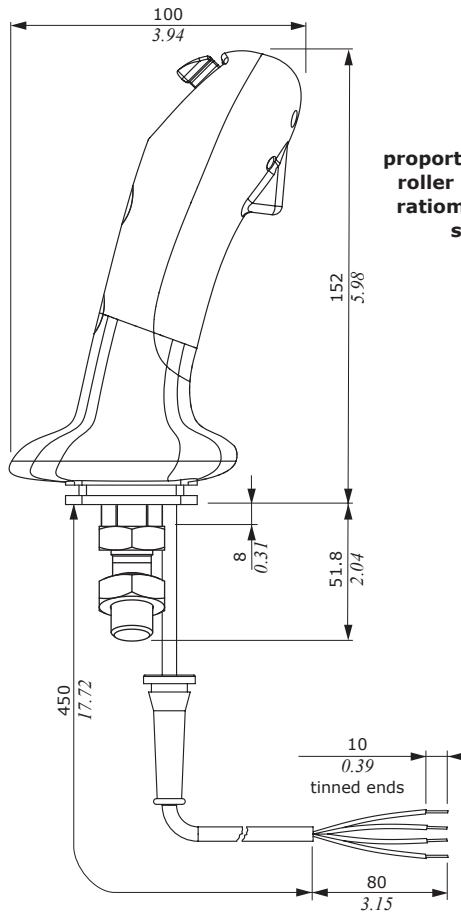
## Dimensions

### With proportional roller with ratiometric signal

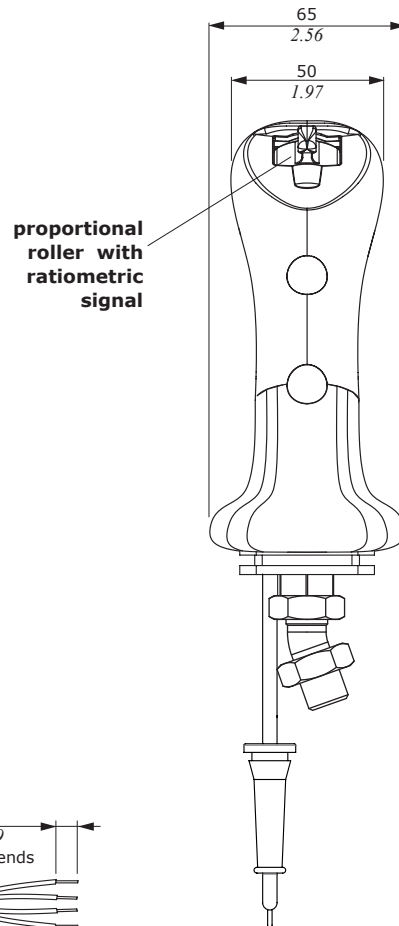
Front view



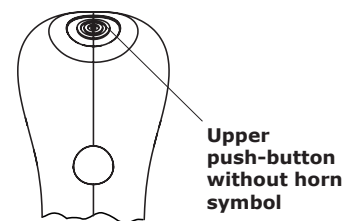
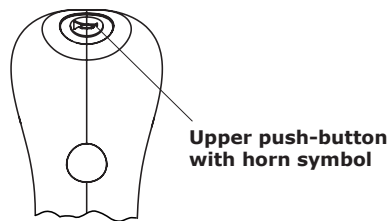
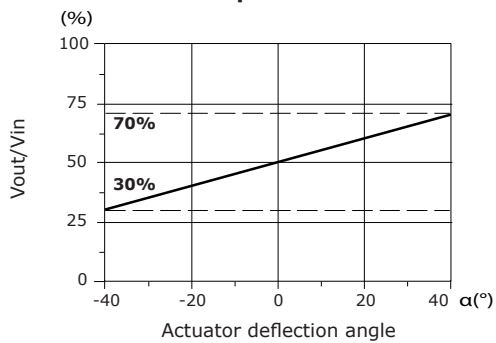
Side view



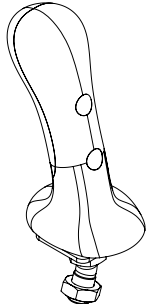
Operator view



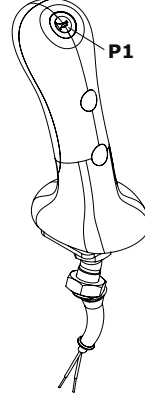
Proportional roller output detail




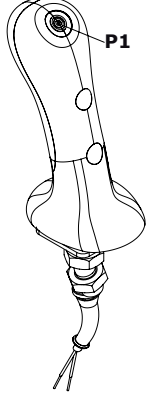
With proportional roller with ratiometric signal



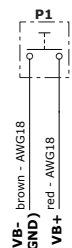
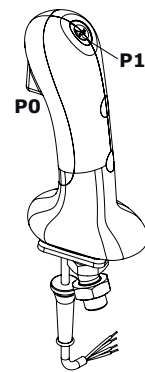
Code	<b>2IM5000000</b>
Description	S007
Configuration	Without control devices
Joint	Sloping 19° left for SVM400-430 joystick



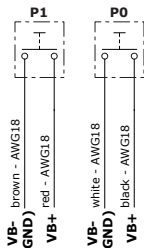
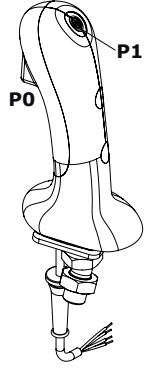
Code	<b>2IM5100002</b>
Description	S107-045
Configuration	With upper push-button with horn symbol (P1)
Joint	Sloping 19° left for SVM400-430 joystick

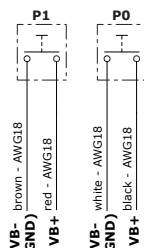
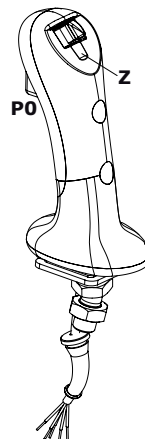
Code	<b>2IM5120001</b>
Description	S10A8-045
Configuration	With upper push-button without horn symbol (P1)
Joint	Sloping 19° right for SVM400-430 joystick

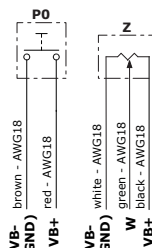
Code	<b>2IM5210002</b>
Description	S218-045
Configuration	With upper push-button with horn symbol (P1) and front trigger (P0)
Joint	Sloping 19° right for SVM400-430 joystick

Code	<b>2IM5210003</b>
Description	S21A7-045
Configuration	With upper push-button without horn symbol (P1) and front trigger (P0)
Joint	Sloping 19° left for SVM400-430 joystick

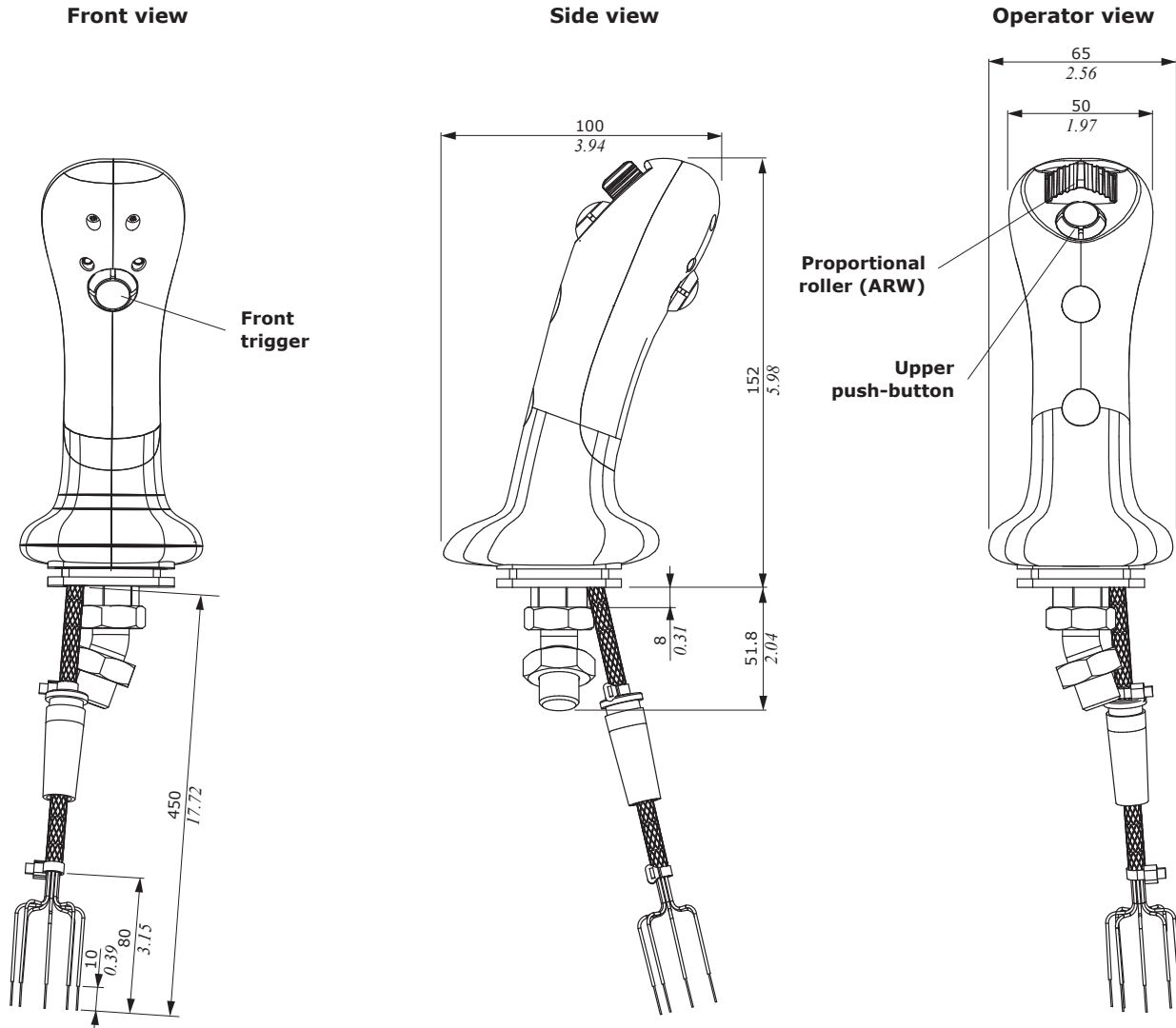
Code	<b>2IM5110003</b>
Description	S117-045
Configuration	With proportional roller (Z) and front trigger (P0)
Joint	Sloping 19° left for SVM400-430 joystick



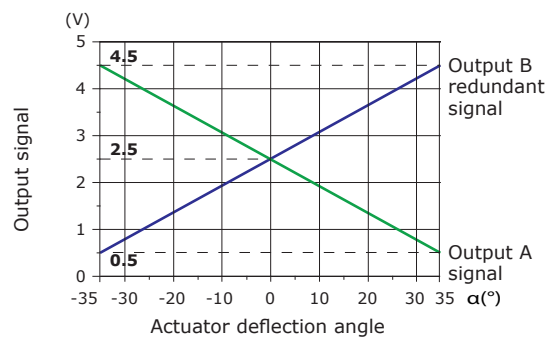
NOTE - For different joint see page 4.  
For different handle configurations, contact our Sales Dept.

### Dimensions

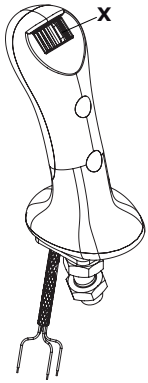
#### With ARW proportional roller



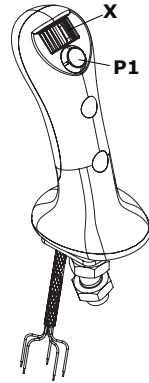
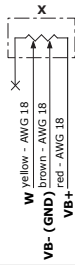
**Proportional roller output detail**



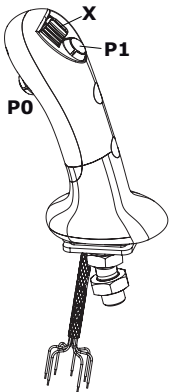
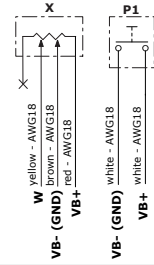
With ARW proportional roller



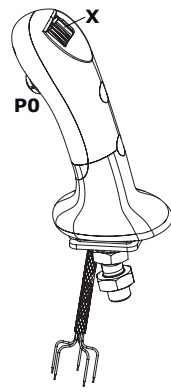
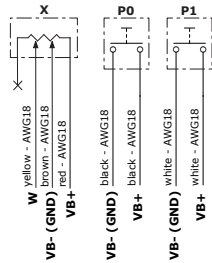
**Code** 2IM530000  
**Description** SZ8-XG122045  
**Configuration** With ARW proportional roller (X)  
**Joint** Sloping 19° right for SVM400-430 joystick



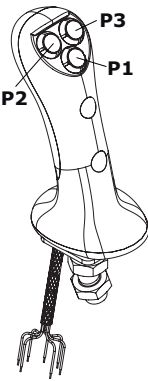
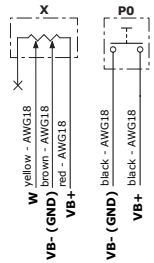
**Code** 2IM532000  
**Description** SZTB8-1G4045-XG122045  
**Configuration** With ARW proportional roller (X) and thumb type upper push-button (P1)  
**Joint** Sloping 19° right for SVM400-430 joystick



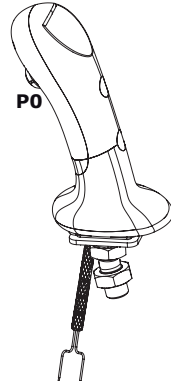
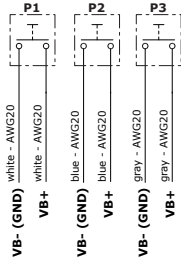
**Code** 2IM5330003  
**Description** SZTC8-0G4045-1G4045-XG122045  
**Configuration** With ARW prop.roller (X), thumb type upper push-button (P1) and front trigger (P0)  
**Joint** Sloping 19° right for SVM400-430 joystick



**Code** 2IM5310003  
**Description** SZTA8-0G4045-XG122045  
**Configuration** With ARW proportional roller (X) and front trigger (P0)  
**Joint** Sloping 19° right for SVM400-430 joystick



**Code** 2IM5440000  
**Description** STB38-1RB045-2RB045-3RB045  
**Configuration** With 3 upper push-buttons (P1-P2-P3)  
**Joint** Sloping 19° right for SVM400-430 joystick



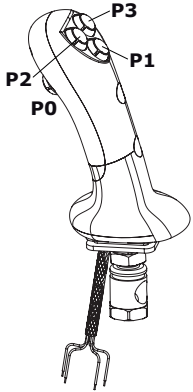
**Code** 2IM5410001  
**Description** STA8-0G4045  
**Configuration** With front trigger (P0)  
**Joint** Sloping 19° right for SVM400-430 joystick



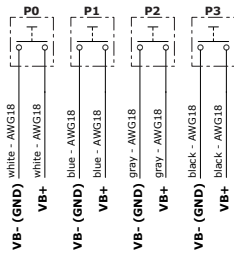
NOTE - For different joint see page 4.  
 For different handle configurations, contact our Sales Dept.

## Configurations

### With ARW proportional roller



Code	<b>2IM5430000</b>
Description	STC39-0RB045-1RB045-2RB045-3RB045
Configuration	With 3 upper push-buttons and front trigger (P1-P2-P3) and front trigger (P0)
Joint	Standard for SVM400 joystick



NOTE - For different joint see page 4.  
For different handle configurations, contact our Sales Dept.



## V series handle

- Ergonomic design with elastomericated rubber
- Available with ON/OFF push-button

### General features

Covering material	elastomericated rubber
Core material	Nylon®
IP weather protection (assembled)	IP44
Ambient temperature	from -20°C to 60°C / from -4°F to 140°F

### Electric devices features

#### ON/OFF push-button

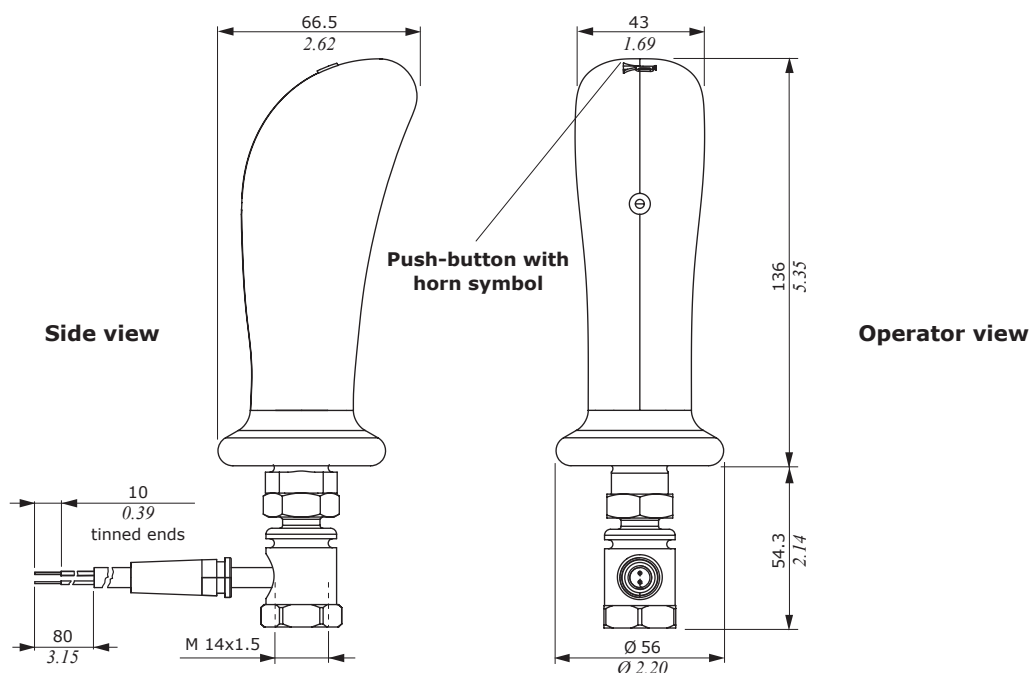
Version	spring return
Contact type	NO
Current rating	4 A resistive @ 24 VDC
Electric life (nr. of operations)	10 <sup>4</sup>
Weather protection	IP44



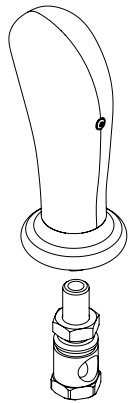
#### Cables

Conductor material	Copper with tinned ends
Nr. of conductors	from 2 to 3
Conductor section	AWG20
Insulating material	PVC
Protective covering material	polyolefin

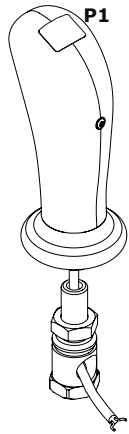
## Dimensions



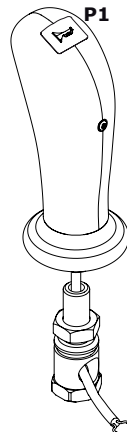
### Configurations



Code	<b>5IMP030011</b>
Description	V009
Configuration	Without push-button
Joint	Standard for SVM400-430 joystick



Code	<b>5IMP032012</b>
Description	V209-045
Configuration	Push-button with spring return without horn symbol (P1)
Joint	Standard for SVM400-430 joystick



Code	<b>5IMP031160</b>
Description	V109-045
Configuration	Push button with spring return with horn symbol (P1)
Joint	Standard for SVM400-430 joystick



NOTE - For different joint see page 4.  
For different handle configurations, contact our Sales Dept.





## Handle Series J

- Cylindrical  $\varnothing$  30 mm /  $\varnothing$  1.18 in Nylon®
- ON/OFF control with push button or rocker switch

### General features

Cap material	Neoprene
Body material	Nylon®
IP weather protection (assembled)	IP44
Ambient temperature	from -20°C to 60°C / from -4°F to 140°F

### Electric devices features

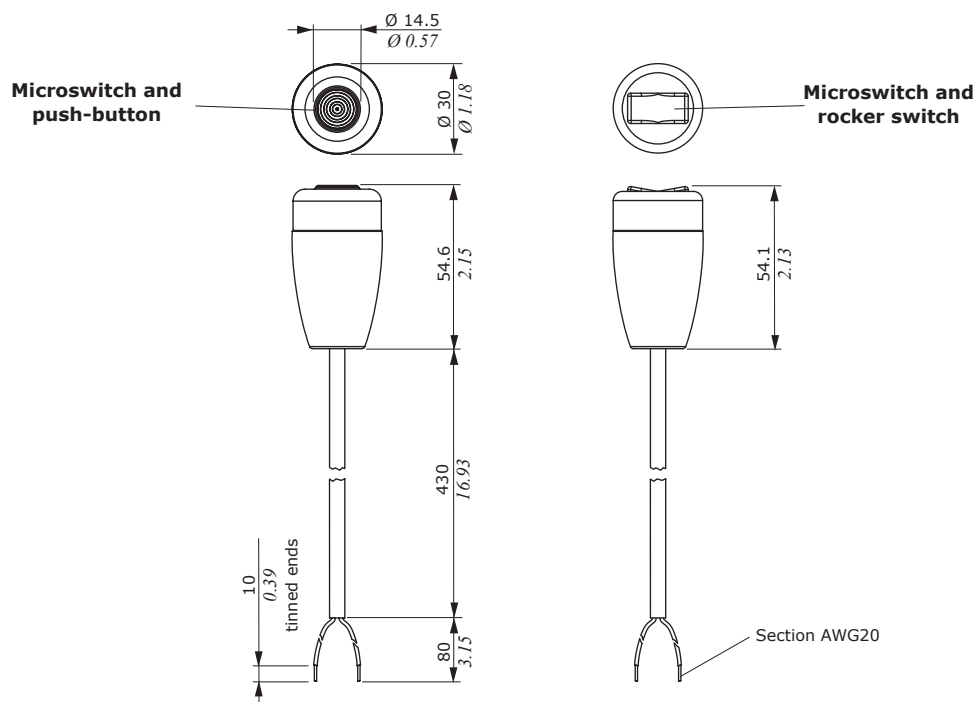
#### ON/OFF push-button

Version	Spring return
Contact type	NO
Current rating	6 A resistive - @ 30 VDC
Electric life (nr. of operations)	5x10 <sup>4</sup>

#### Cables

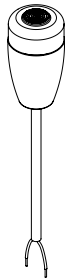
Conductor material	Copper with tinned ends
Conductor section	AWG20
Insulating material	PVC
Protective covering material	PVC

## Dimensions

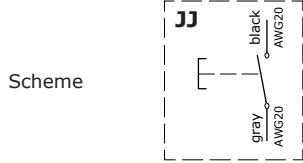


### Configurations

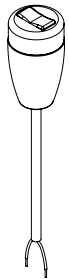
#### Push-button control



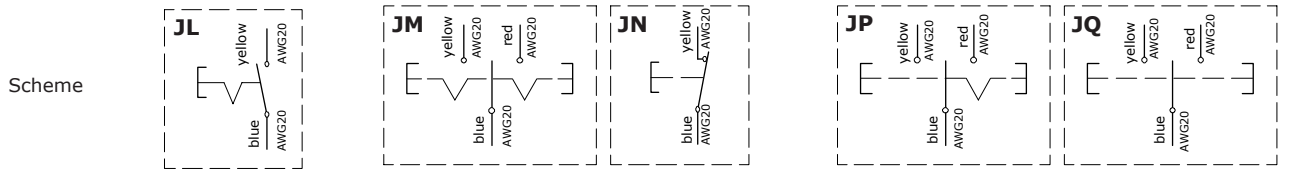
Code	<b>5IMP110000</b>
Description	JJI/C
Configuration	Push-button control



#### Rocker switch control



Code	<b>5IMP210000</b>	<b>5IMP310000</b>	<b>5IMP410000</b>	<b>5IMP510000</b>	<b>5IMP610000</b>
Description	JLI/C	JMI/C	JNI/C	JPI/C	JQI/C
Configuration	ON/OFF detent	ON/OFF/ON detent	(OFF)/ON Spring return	(ON)/OFF/ON Spring return in one direction and detent in the other direction	(ON)/OFF/(ON) Spring return



NOTE - For different joint see page 4.  
For different handle configurations, contact our Sales Dept.



## Handle 10 series

- Cylindrical  $\varnothing$  39 mm /  $\varnothing$  1.53 in in Nylon®
- ON/OFF control with push button or rocker switch

### General features

Cap material	Neoprene
Body material	Nylon®
IP weather protection (assembled)	IP44
Ambient temperature	from -20°C to 60°C / from -4°F to 140°F

### Electric devices features

#### ON/OFF push-button

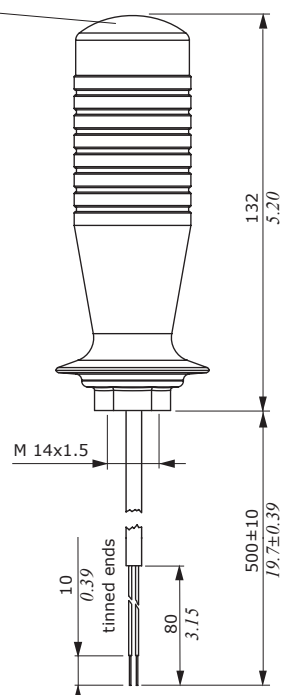
Version	spring return
Contact type	NA
Current rating	6 A resistive - 4 A inductive @ 30 VDC
Mechanical life (nr. of operations)	3x10 <sup>6</sup>
Electric life (nr. of operations)	10 <sup>5</sup>
Weather protection	IP54

#### Cables

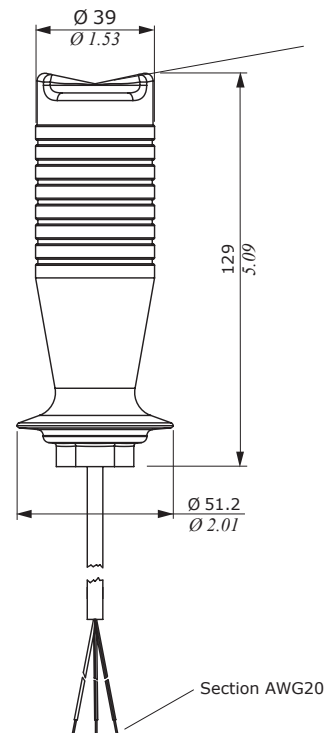
Conductor material	Copper with tinned ends
Conductor section	AWG20
Insulating material	PVC
Protective covering material	PVC

## Dimensions

Microswitch and push-button

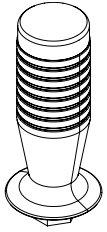


Microswitch and rocker switch



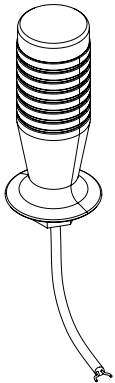
### Configurations

#### No push-button control



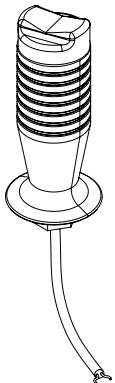
Code	<b>5IMP100000</b>
Description	WI
Configuration	Without push-button

#### Push-button control



Code	<b>5IMP200000</b>	<b>5IMP500000</b>
Description	XI/C	KI/C
Configuration	(ON)/OFF type	(ON)/OFF type with protection
Scheme		

#### Rocker switch control



Code	<b>5IMP600000</b>	<b>5IMP400000</b>	<b>5IMP300000</b>
Description	TI/C	YI/C	ZI/C
Configuration	ON/OFF/ON type	(ON)/OFF/(ON) type	ON/OFF type
Scheme			

NOTE - For different joint see page 4.

For different handle configurations, contact our Sales Dept.



## Handlevers

- Lengths from 120 to 400 mm / from 4.72 to 15.75 in with thread M8, M10, M12
- Available with different models of handles

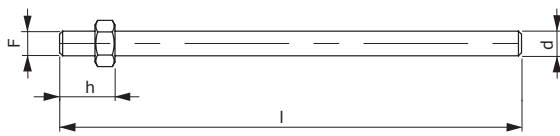
### General features

Rod material	zinc-coated steel
Knob material	thermoplastic or thermosetting resins
Ambient temperature	from -20°C to 60°C / from -4°F to 140°F

NOTE - For different conditions, please contact our Sales Dept

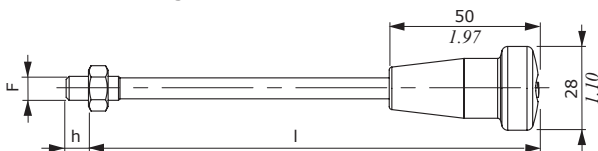
## Without microswitches

### AL00: without handles



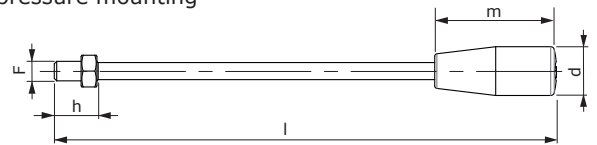
F	h (thread)		l	d		Code	
<b>M8</b>	19	0.75	120	4.72	8	0.32	170011214
			150	5.91			170011215
			200	7.87			170011220
			250	9.84			170011225
<b>M10</b>	24	0.94	150	4.72	10	0.39	170012215
			200	7.87			170012220
			250	9.84			170012224
			300	11.8			170012230

### AL02: black moulded thermoplastic resin knob with pressure mounting



F	h (thread)		l	Code	
<b>M8</b>	18	0.71	158	6.22	170011216
<b>M10</b>	22	0.87	159	6.26	170012016
			209	8.23	170012022
<b>M12</b>	28	1.10	219	8.62	170013021

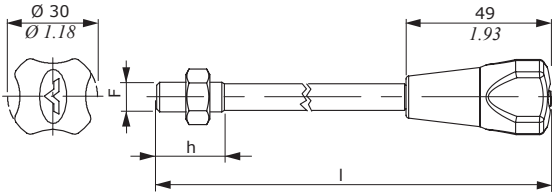
### AL01: black cylindrical thermoplastic resin knob with pressure mounting



F	h (thread)		l	d	m		Code		
<b>M8</b>	18	0.71	127	5.00	20	0.79	50	1.97	170011012
			157	6.18					170011015
			206	8.11					170011020
			256	10.08					170011226
<b>M10</b>	22	0.87	306	12.05	22	0.87	60	2.36	170011230
			356	14.01					170011236
			406	15.98					170011241
			156	6.14					170012015
			206	8.11					170012020
			256	10.08					170012025
			306	12.05					170012030
			356	14.01					170012035
<b>M12</b>	28	0.71	406	15.98	26	1.02	72	2.83	170012040
			206	8.11					170013020
			256	10.08					170013025
			306	12.05					170013030
			356	14.01					170013035
			406	15.98					170013040

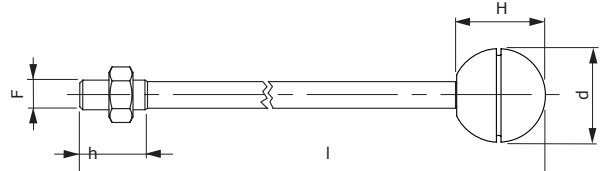
### Without microswitches

**AL03:** red moulded thermoplastic resin knob with pressure mounting



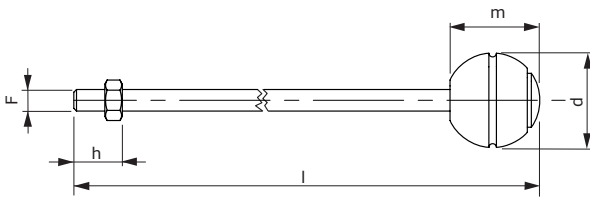
F	h (thread)	l	Code
M8	18 0.71	158 6.22	170011217
M10	22 0.87	158 6.22	170012017
		208 8.19	170012023

**AL04:** black spherical thermosetting resin knob with pressure mounting



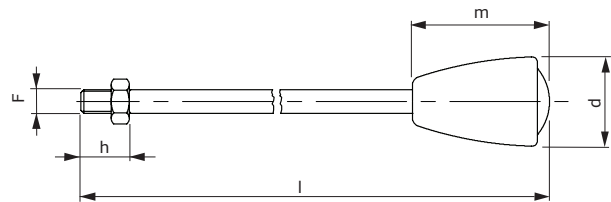
F	h (thread)	l	d	m	Code
M10	22 0.87	210 7.87	30 1.18	28 1.10	170012223
		260 9.84			170012226
M12	28 1.10	220 7.87	40 1.57	38.5 1.52	170013019
		270 9.84			170013027

**AL06:** black spherical thermosetting resin knob with portlight and pressure mounting



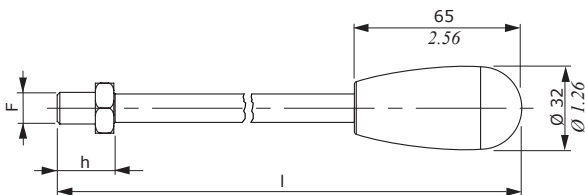
F	h (thread)	l	d	m	Code
M8	19 0.75	220 8.66	35 1.38	33.5 1.32	170011255
M10	22 0.87	220 8.66	40 1.57	38.5 1.52	170012221

**AL07:** black ogival thermosetting resin knob with portlight and pressure mounting



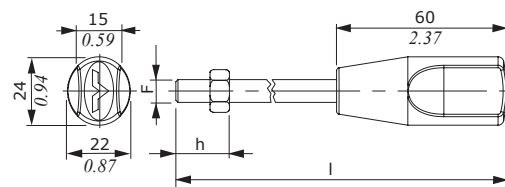
F	h (thread)	l	d	m	Code
M8	19 0.75	163 6.42	32 1.26	45 1.77	170011219
		213 8.38			170011222
M10	22 0.86	224 8.82	32 1.26	49 1.93	170012222

**AL08:** Black ogival thermosetting resin knob with M10 thread mounting



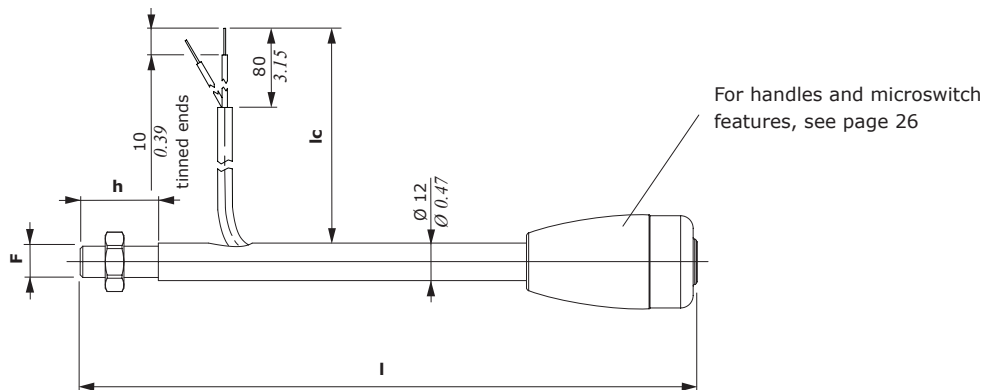
F	h (thread)	l	Code
M12	22 0.87	160 6.30	170013115
		210 8.27	170013120
		260 10.24	170013125
		310 12.20	170013130
		361 14.21	170013135

**AL11:** black thermoplastic resin knob, injection molded on rod



F	h (thread)	l	Code
M8	19 0.43	162 6.38	170408150
		212 8.35	170408200
		250 9.84	170408250
M10	24 0.94	165 6.50	170410150
		215 8.46	170410200
		265 10.43	170410250

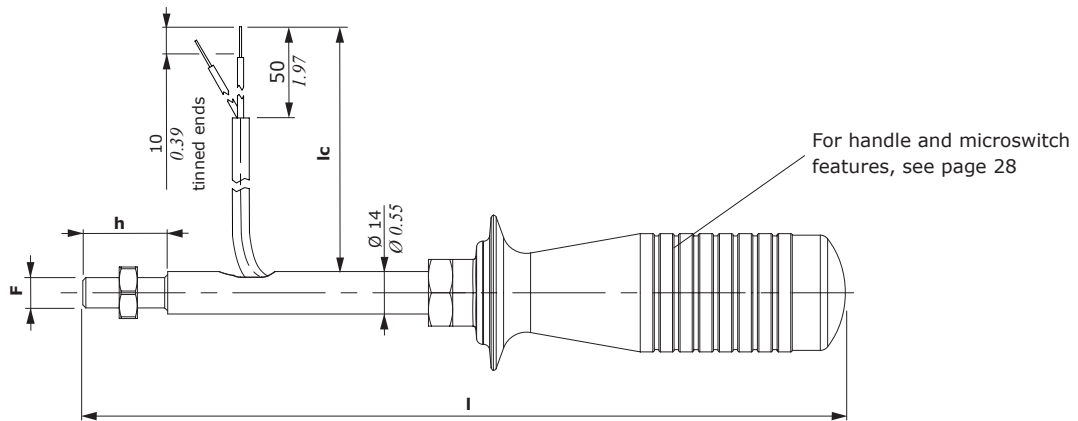
With microswitch and J series handle



Type	knob (page 26 )	F=M10							F=M12						
		h (thread)		l	lc		Code	h (thread)		l	lc		Code		
AL24	JJ type	25	0.98	150	5.91	480	18.9	1702J2415	25	0.98	200	7.87	430	16.9	1702J3420
		200	7.87	430	16.9	1702J2420	250	9.84			380	15.0	1702J3425		
AL25	JL type	25	0.98	150	5.91	480	18.9	1702L2415	25	0.98	200	7.87	430	16.9	1702L3420
		200	7.87	430	16.9	1702L2420	250	9.84			380	15.0	1702L3425		
AL26	JM type	25	0.98	150	5.91	480	18.9	1702M2415	25	0.98	200	7.87	430	16.9	1702M3420
		200	7.87	430	16.9	1702M2420	250	9.84			380	15.0	1702M3425		
AL27	JN type	25	0.98	150	5.91	480	18.9	1702N2415	25	0.98	200	7.87	430	16.9	1702N3420
		200	7.87	430	16.9	1702N2420	250	9.84			380	15.0	1702N3425		
AL28	JP type	25	0.98	150	5.91	480	18.9	1702P2415	25	0.98	200	7.87	430	16.9	1702P3420
		200	7.87	430	16.9	1702P2420	250	9.84			380	15.0	1702P3425		
AL29	JQ type	25	0.98	150	5.91	480	18.9	1702Q2415	25	0.98	200	7.87	430	16.9	1702Q3420
		200	7.87	430	16.9	1702Q2420	250	9.84			380	15.0	1702Q3425		

NOTE - For uncoded configurations or cables with no standard length, contact our Sales Dept.

### With microswitch and 10 series handle

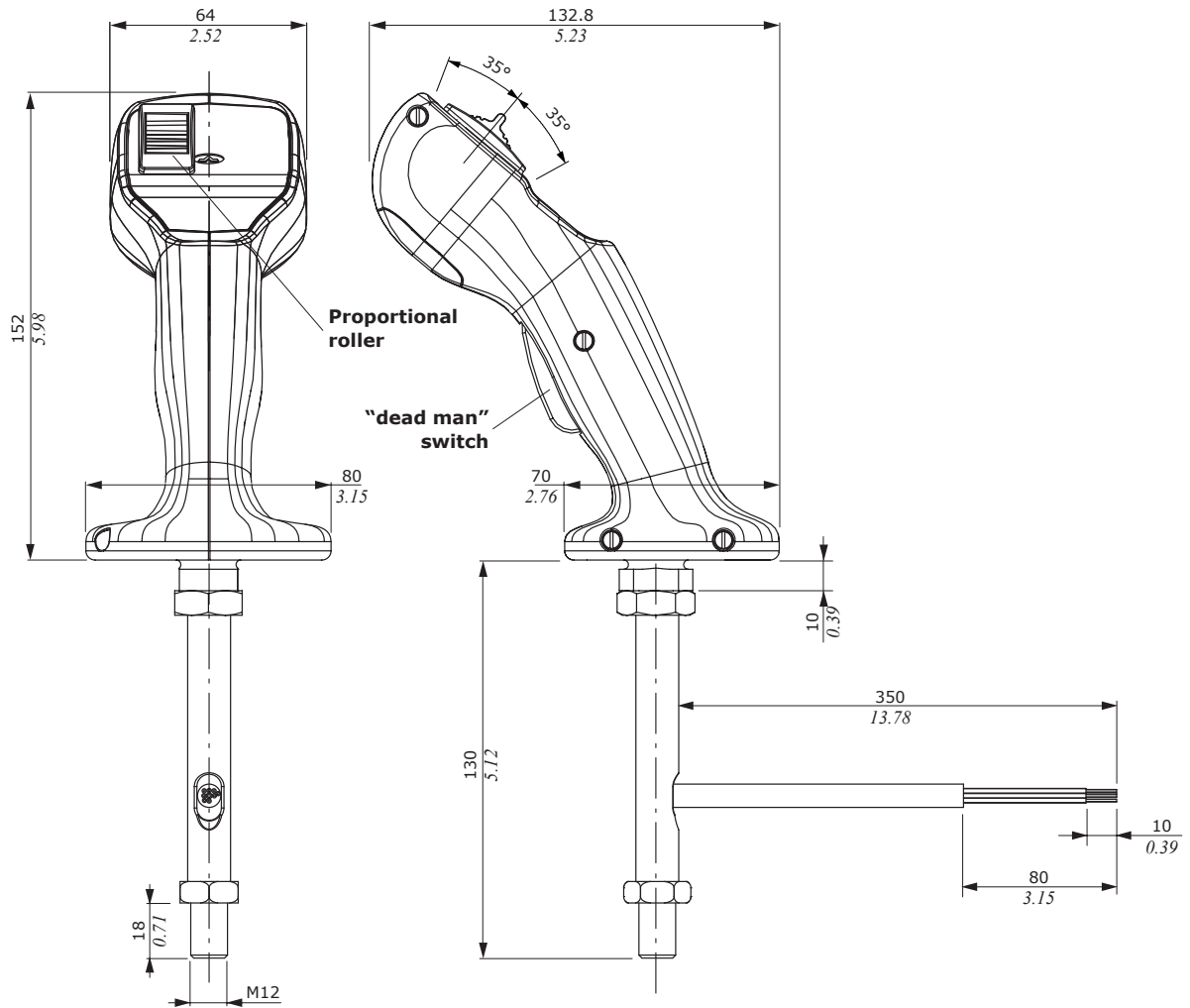


Type	Handle (page 28)	F=M10						F=M12							
		h (thread)		l	lc	Code	h (thread)	l	lc	Code					
AL14	W type	28	1.10	250	9.84	/	1701W2525	25	0.98	250	9.84	/	1701W3525		
				250	9.84	425	16.7			1701X2525	250	9.84	425	16.7	1701X3525
AL15	X type	25	0.98	300	11.8	375	14.8	1701X2530	25	0.98	300	11.8	375	14.8	1701X3530
				350	13.8	325	12.8	1701X2535			350	13.8	325	12.8	1701X3535
				250	9.84	425	16.7	1701Z2525			250	9.84	425	16.7	1701Z3525
AL16	Z type	25	0.98	300	11.8	375	14.8	1701Z2530	25	0.98	300	11.8	375	14.8	1701Z3530
				350	13.8	325	12.8	1701Z2535			350	13.8	325	12.8	1701Z3535
				250	9.84	425	16.7	1701Y2525			250	9.84	425	16.7	1701Y3525
AL17	Y type	25	0.98	300	11.8	375	14.8	1701Y2530	25	0.98	300	11.8	375	14.8	1701Y3530
				350	13.8	325	12.8	1701Y2535			350	13.8	325	12.8	1701Y3535
				250	9.84	425	16.7	1701K2525			250	9.84	425	16.7	1701K3525
AL18	K type	25	0.98	300	11.8	375	14.8	1701K2530	25	0.98	300	11.8	375	14.8	1701K3530
				350	13.8	325	12.8	1701K2535			350	13.8	325	12.8	1701K3535
				250	9.84	425	16.7	1701T2525			250	9.84	425	16.7	1701T3525
AL19	T type	25	0.98	300	11.8	375	14.8	1701T2530	25	0.98	300	11.8	375	14.8	1701T3530
				350	13.8	325	12.8	1701T2535			350	13.8	325	12.8	1701T3535

NOTE - For uncoded configurations or cables with no standard length, contact our Sales Dept.



Handlever with P series handle

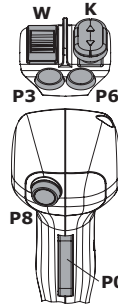
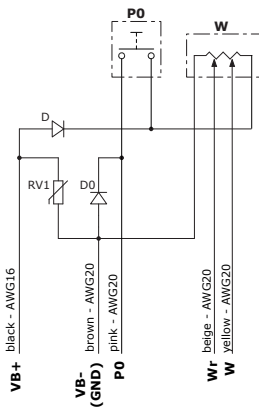


### Handlever with P series handle

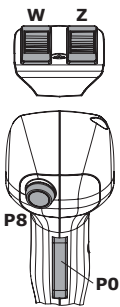
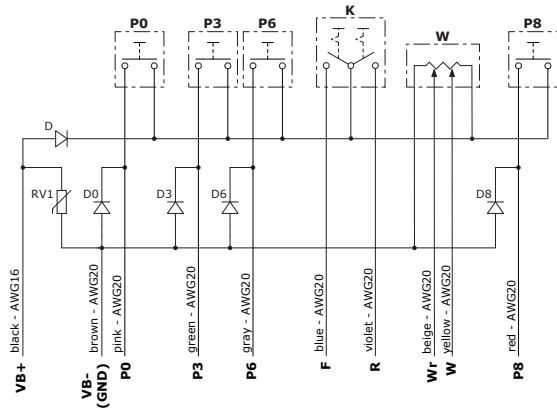
#### Configurations



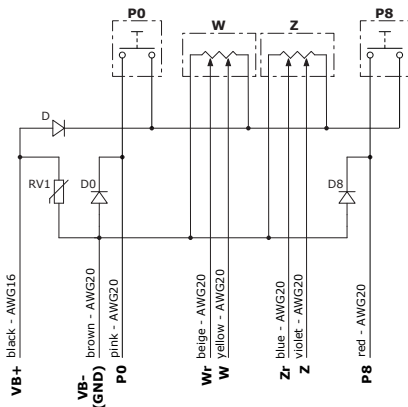
Code	<b>170800068</b>
Description	AL80-PZA0100D0-ORD035-WN130035(RV)-M12x280
Plate	1 proportional roller (W)
Frontal zone	"Dead man" switch (P0)
Lever	M12x280



Code	<b>170800035</b>
Description	AL80-PZTM2110C0-ORD035-3R2D035-6R2D035-8R2D035-WN130035-KRS035(RV)-M12x280
Plate	2 push-buttons with spring return (P3-P6), proportional roller (W), FNR rocker switch (K)
Frontal zone	"Dead man" switch (P0), 1 push-button with spring return (P8)
Lever	M12x280



Code	<b>170800036</b>
Description	AL80-PZMM0200B0-ORD035-8R2D035-WN130035-ZN130035-(D2F12)-(TC-PROT)-M12x280
Plate	2 proportional rollers (W-Z)
Frontal zone	"Dead man" switch (P0), 1 push-button with spring return (P8)
Lever	M12x280



NOTE - For different joint see page 4.

For different handle configurations, contact our Sales Dept.



2<sup>nd</sup> edition March 2015

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