



Handles and handlevers

TECHNICAL CATALOGUE



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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.

4th edition October 2017

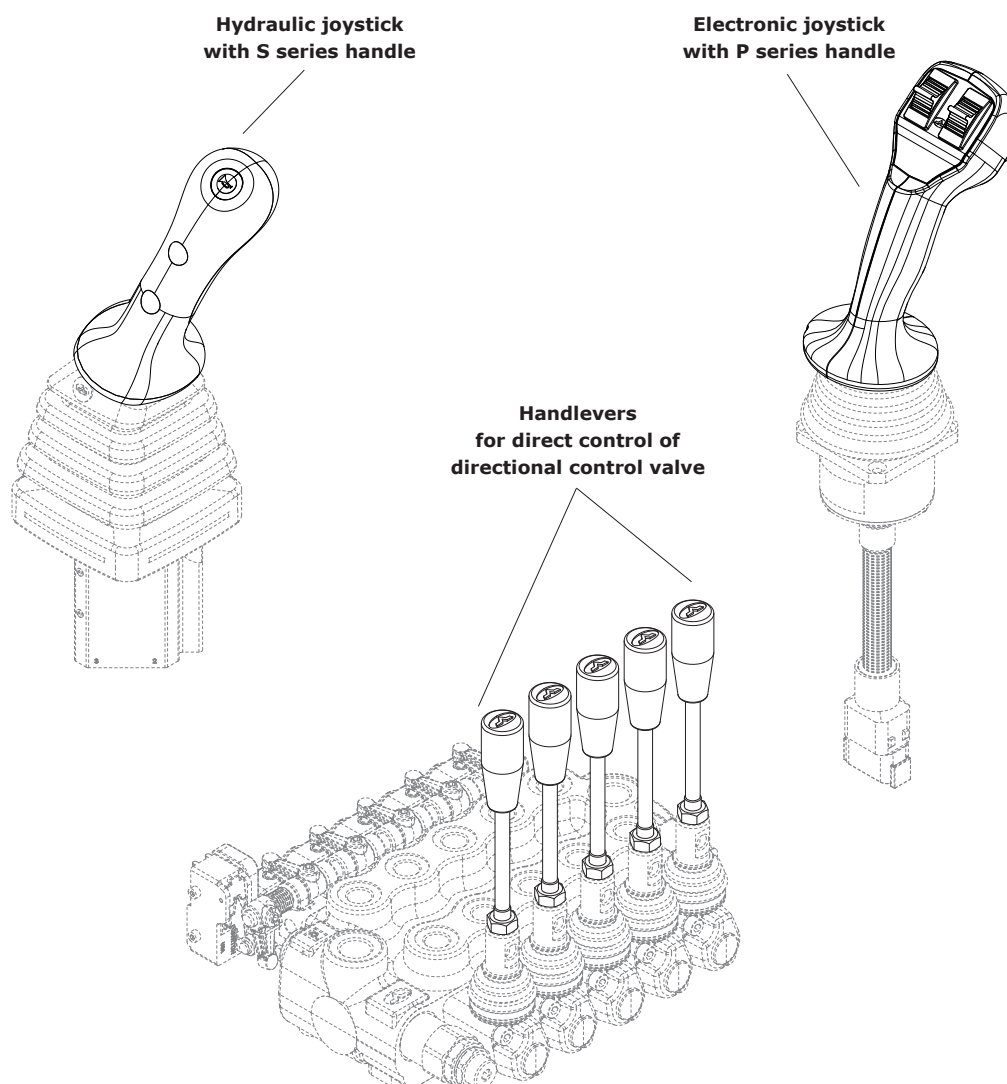
System description

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		AMH series	P series	H series	S series	V series	J series	10 series
ON/OFF* functions	push-button	10	8	8	4	1	1	1
	rocker switch	-	2	2	-	-	1	1
Proportional functions*		1	2	1	1	-	-	-
Dead man		•	•	•	-	-	-	-
Max. current rating		5 A	16 A	7A	7A	4A	6A	6A

(*) Max. number of functions

Handles and hand levers

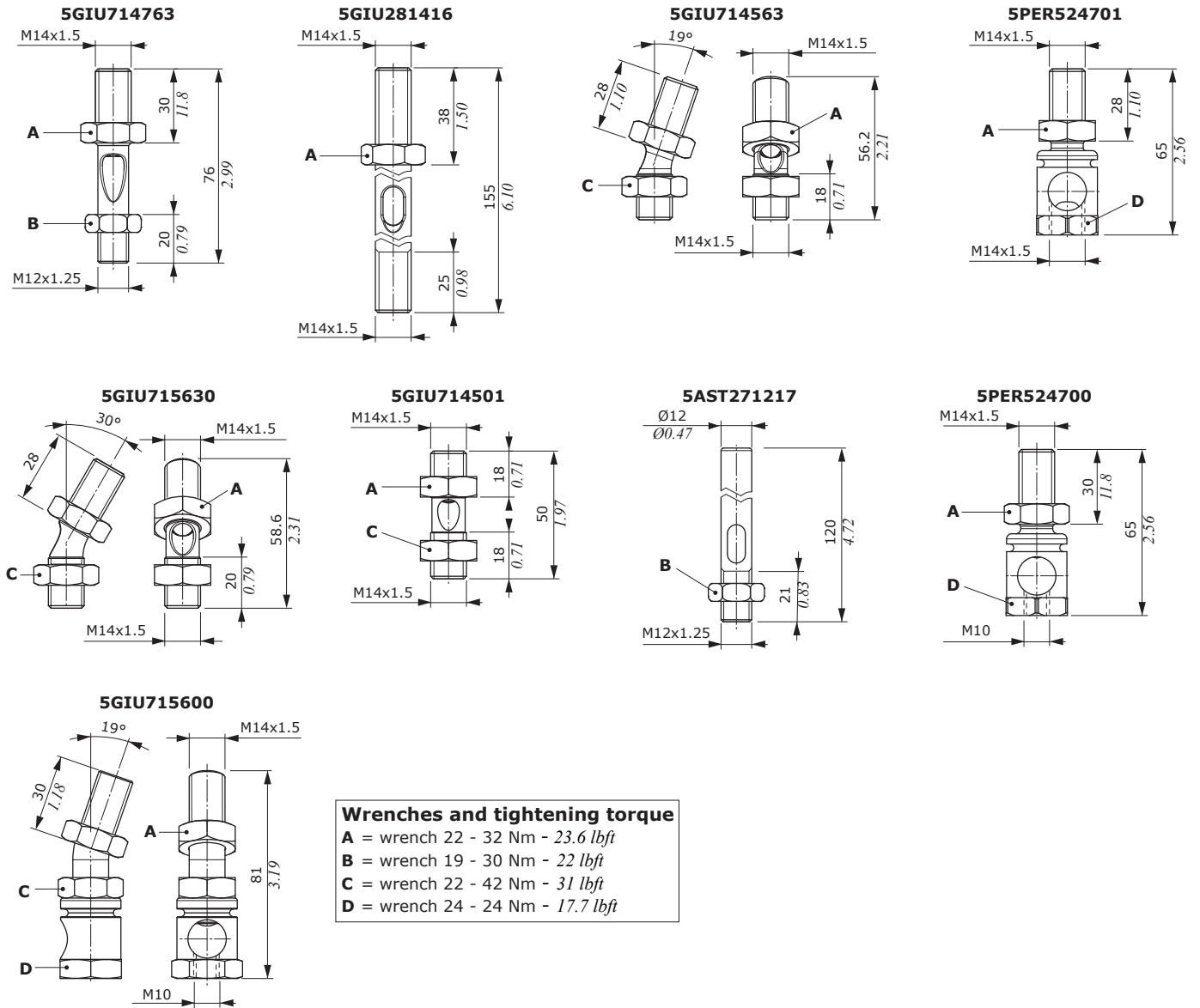
Joins-handle tables

		Joint type			Handle type						
Type	Description	Code	Wrench and tightening torque (on handle)	Wrench and tightening torque (on control valve)	AMH series	P series	H series	S series	V series	J series	10 series
/	Universal joint (included in handle code)	3GIU119370	-	19	-	-	•	-	-	-	-
		3GIU119373	-	19	-	•	-	-	-	-	-
		3GIU119250	-	19	•	-	-	-	-	-	-
Additional joint for handle assembly on remote controls: to be screwed on universal joint, where present											
3	For SVM100	5GIU714763	22 / 32 Nm - 23.6 lbft	19 / 30 Nm - 22 lbft	•	•	•	-	•	-	•
4	For SCF031	5AST281416	22 / 32 Nm - 23.6 lbft	-	•	•	•	-	•	-	•
7	For SVM400-SVM400EMD-SVM405-SVM430-SVM450-SVM600 sloping 19° left	5GIU714563	22 / 32 Nm - 23.6 lbft	22 / 42 Nm - 31 lbft	•	•	•	•	•	-	-
8	For SVM400-SVM400EMD-SVM405-SVM430-SVM450-SVM600 sloping 19° right	5GIU714563	22 / 32 Nm - 23.6 lbft	22 / 42 Nm - 31 lbft	•	•	•	•	•	-	-
9	For SVM400-SVM430-SVM450	5PER524701	22 / 32 Nm - 23.6 lbft	24 / 24 Nm - 17.7 lbft	•	•	•	•	•	-	•
E	For SVM400-SVM400EMD-SVM430 sloping 30° left	5GIU715630	22 / 32 Nm - 23.6 lbft	22 / 42 Nm - 31 lbft	•	•	•	•	•	-	-
F	For SVM400-SVM400EMD-SVM430 sloping 30° right	5GIU715630	22 / 32 Nm - 23.6 lbft	22 / 42 Nm - 31 lbft	•	•	•	•	•	-	-
G	For SVM400EMD	5GIU714501	22 / 32 Nm - 23.6 lbft	22 / 42 Nm - 31 lbft	•	•	•	•	•	-	-
H	For SVM400-SVM400EMD-SVM430 sloping 19° forward	5GIU714563	22 / 32 Nm - 23.6 lbft	22 / 42 Nm - 31 lbft	•	•	•	•	•	-	-
I	For SVM400-SVM400EMD-SVM430 sloping 19° reverse	5GIU714563	22 / 32 Nm - 23.6 lbft	22 / 42 Nm - 31 lbft	•	•	•	•	•	-	-
L	For SVM400-SVM400EMD-SVM430 sloping 30° forward	5GIU715630	22 / 32 Nm - 23.6 lbft	22 / 42 Nm - 31 lbft	•	•	•	•	•	-	-
M	for SVM400-SVM400EMD-SVM430 sloping 30° reverse	5GIU715630	22 / 32 Nm - 23.6 lbft	22 / 42 Nm - 31 lbft	•	•	•	•	•	-	-
-	For SVM100-SVM150	5AST271217	-	19 / 30 Nm - 22 lbft	-	-	-	-	-	•	-

For control devices no longer available

		Joint type			Handle type						
Type	Description	Code	Wrench and tightening torque (on handle)	Wrench and tightening torque (on control valve)	AMH series	P series	H series	S series	V series	J series	10 series
1	For SV01	5PER524700	22 / 32 Nm - 23.6 lbft	24 / 24 Nm - 17.7 lbft	•	•	•	-	•	-	•
3	For SV10	5GIU714763	22 / 32 Nm - 23.6 lbft	24 / 24 Nm - 17.7 lbft	•	•	•	-	•	-	•
5	For SV01 sloping 19° left	5GIU715600	22 / 32 Nm - 23.6 lbft	22 / 24 Nm - 17.7 lbft	•	•	•	-	•	-	-
6	For SV01 sloping 19° right	5GIU715600	22 / 32 Nm - 23.6 lbft	24 / 24 Nm - 17.7 lbft	•	•	•	-	•	-	-

Additional joint for handle assembling on remote controls





AMH series handles


- Ergonomic design
- Available with different proportional and ON/OFF functions
- High resistance thermoplastic material
- Plate with customizable symbols

General features


Body, shell and plate material	Nylon® 6, 30% SV
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 with detent

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


LED

Supply voltage (max.)	12V (10 mA)	
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ON/OFF push button

Version	ritorno a molla	
Contact type	NA	
Current rating	2 A resistive load @ 12 VDC	
Mechanical life (nr. of operations)	10 ⁶	
Electric life (nr. of operations)	200x10 ³	
Weather protection	IP67 with handle mounting	

Proportional roller

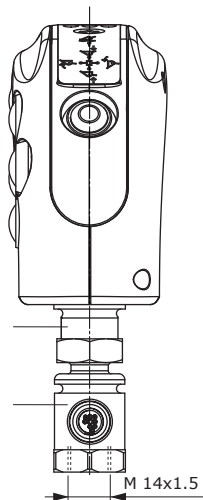
Supply	9-32 VDC	
Max. current consumption	< 24 mA	
Max. output current	1 mA	
Output signal (range)	0.5 - 4.5 V	
Output signal (central position)	2.5V	
Signal tolerance (central position and stroke end)	±100 mV	
Minimum load	10 Ω	
Actuator deflection angle	± 35° (±1°)	
Mechanical life (nr. of operations)	10 ⁶	
Operating force	2 N	
Mechanical vibration	IEC 68-2	
Mechanical shock	EN 60068-2-29 (pulse 400m/s ² x 6 ms, 100 times)	
Weather protection	IP67-IP69K	
EMC compatibility	ISO 13766 ISO 14982	

Cables

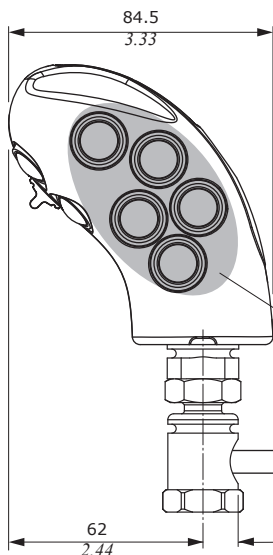
Conductor material	copper with tinned ends
Nr. of conductors	up to 12
Conductor section	from AWG16 to AWG20
Insulating material	PVC
Protective covering material	fireproof polyurethane

Dimensions

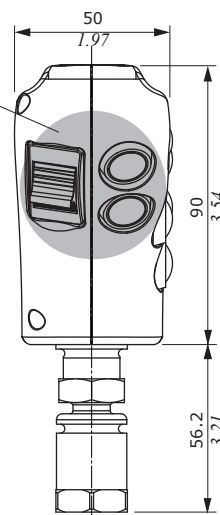
Operator view



Side view



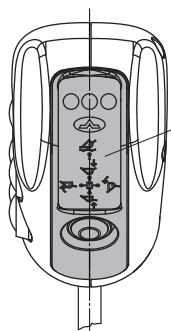
Front view



Front zone
It can be configured up to 4 push-buttons or up to 2 push-buttons and 1 roller

Side zone
It can be configured up to 5 push-buttons or up to 2 push-buttons and 1 roller

tinned ends



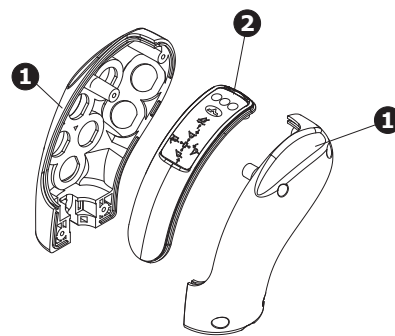
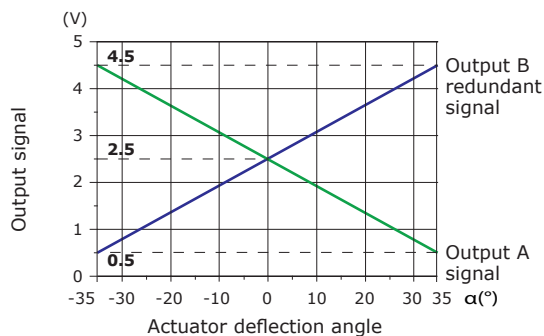
Holder plate

It can be configured up to 1 push-button and 3 LEDs with or without normative

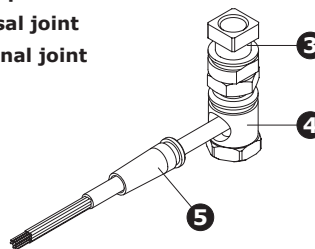
NOTES

Configuration with 2 roller is not available.
The handle can be configured with up to 4 push-buttons with protection diode.

Proportional roller output detail

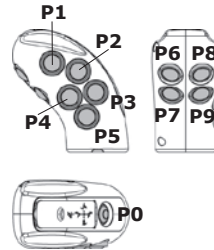


- 1) Half-shell
- 2) Holder plate
- 3) Universal joint
- 4) Additional joint
- 5) Cable

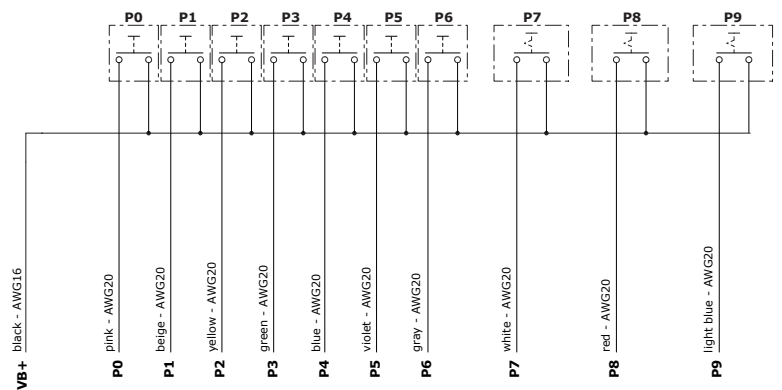


Configurations

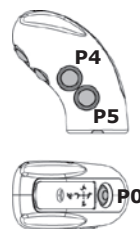
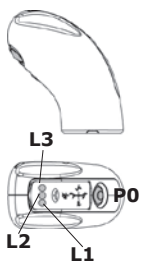
Code	2IM3000000
Description	AMH0000A9-(E2)
Plate	Without push-buttons and LED
Front zone	Without push-buttons
Side zone	Without push-buttons
Joint	Standard for SVM400-430 joystick



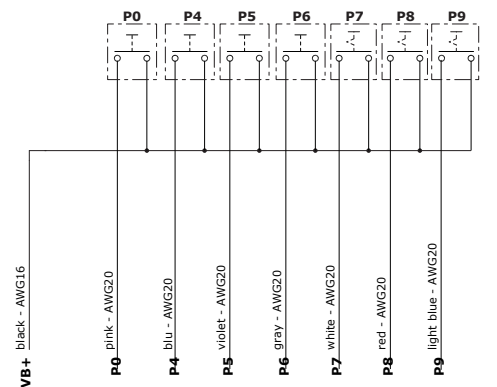
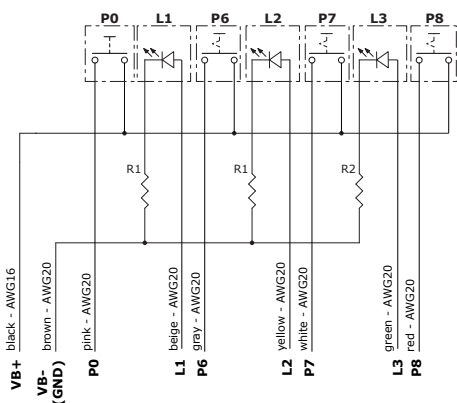
Code	2IM3000001
Description	AMHT1000A9-0R3035-1R2035-2R2035-3R2035-4R2024-5R2035-6R2D035-7R2D035-8R2D035-9R2D035-(E3)
Plate	1 push-button with detent (P0)
Front zone	4 push-buttons with spring return (P6-P7-P8-P9)
Side zone	5 push-buttons with spring return (P1-P2-P3-P4-P5)
Joint	Standard for SVM400-430 joystick



Code	2IM3000002
Description	AMHT0403A9-0RF035-6R2035-7R2035-8R2035-ALV035-BLV035-CLR035-(12VDC)-(E3)
Plate	3 LED (L1-L2-L3) 12 VDC, 1 push-button with detent (P0)
Front zone	3 push-buttons with spring return (P6-P7-P8)
Side zone	Without push-buttons
Joint	Standard for SVM400-430 joystick


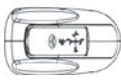


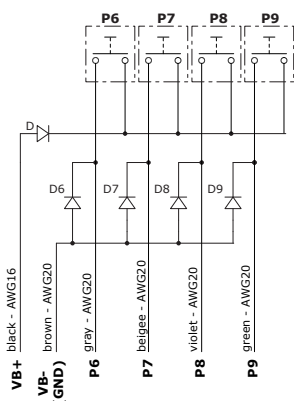
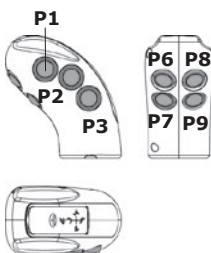
Code	2IM3000003
Description	AMHT0700A9-0RF035-4R2035-5R2035-6R2035-7R2035-8R2035-9R2035-(E2)
Plate	1 push-button with detent (P0)
Front zone	4 push-buttons with spring return (P6-P7-P8-P9)
Side zone	2 push-buttons with spring return (P4-P5)
Joint	Standard for SVM400-430 joystick



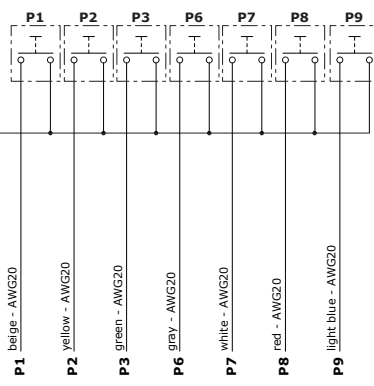
NOTE - For different joint see page 4. For different handle configurations, contact our Sales Dept.



Configurations

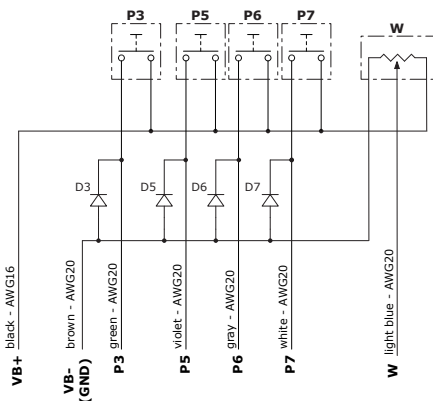
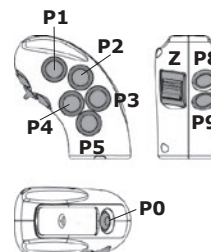
	Code	2IM300004
	Description	AMH0400A9-6R2035-7R2035-8R2035-9R2035-(E2)
	Plate	Without push-buttons and LED
	Front zone	4 push-buttons with spring return (P6-P7-P8-P9) with protect diode
	Side zone	Without push-buttons
	Joint	Standard for SVM400-430 joystick



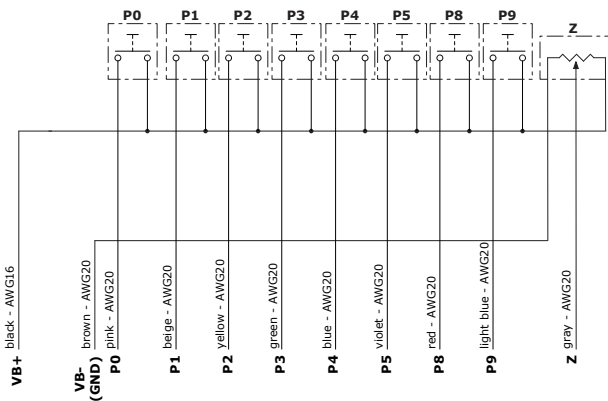
	Code	2IM300005
	Description	AMH0700A9-1R2035-2R2035-3R2035-6R2035-7R2035-8R2035-9R2035-(E3)
	Plate	Without push-buttons and LED
	Front zone	4 push-buttons with spring return (P6-P7-P8-P9)
	Side zone	3 push-buttons with spring return (P1-P2-P3)
	Joint	Standard for SVM400-430 joystick



	Code	2IM3100000
	Description	AMHT0410A9-3R2D035-5R2D035-6R2D035-7R2D035-WN140035-(E1)
	Plate	Without push-buttons
	Front zone	2 push-buttons with spring return (P6-P7) with protect diode
	Side zone	2 push-buttons with spring return (P3-P5) with protect diode, 1 proportional roller (W)
	Joint	Standard for SVM400-430 joystick



	Code	2IM3100001
	Description	AMHT0810A9-0RF035-1R2035-2R2035-3R2035-4R2035-5R2035-8R2035-9R2035-ZN140035-(E1)
	Plate	1 push-button with detent (P0)
	Front zone	2 push-buttons with spring return (P8-P9), 1 proportional roller (Z)
	Side zone	5 push-buttons with spring return (P1-P2-P3-P4-P5)
	Joint	Standard for SVM400-430 joystick



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



P series handle

- 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

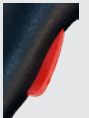
ON/OFF push button

Version	spring return
Contact type	normally open
Current rating	2 A resistive load @ 12 VDC
Mechanical life (nr. of operations)	10 ⁶
Electric life (nr. of operations)	200x10 ³
Weather protection	IP67 with handle mounting



"Dead man" trigger

Version	spring return
Contact type	NA
Current rating	2 A resistive load @ 12 V
Mechanical life (nr. of operations)	10 ⁶
Electric life (nr. of operations)	200x10 ³
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 ⁶
Electric life (nr. of operations)	5x10 ⁵
Weather protection	IP67 with handle mounting



Proportional roller

Supply	9-32 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 ⁶
Operating force	2 N
Mechanical vibration	IEC 68-2 EN 60068-2-29
Mechanical shock	(pulse 400m/s ² 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 load @ 12 VDC
Mechanical life (nr. of operations)	10 ⁵
Electric life (nr. of operations)	200x10 ³
Weather protection	IP68



FNR rocker switch

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

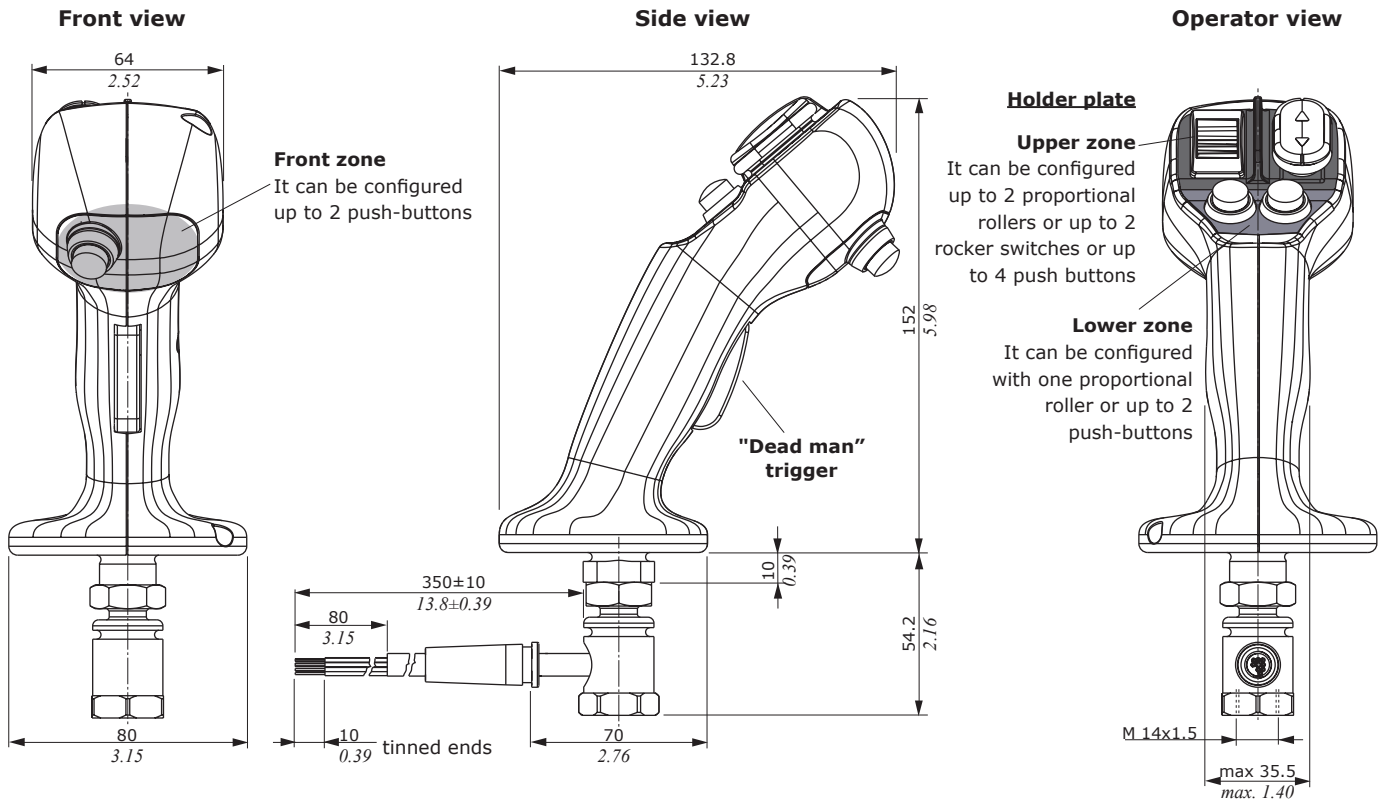


LED

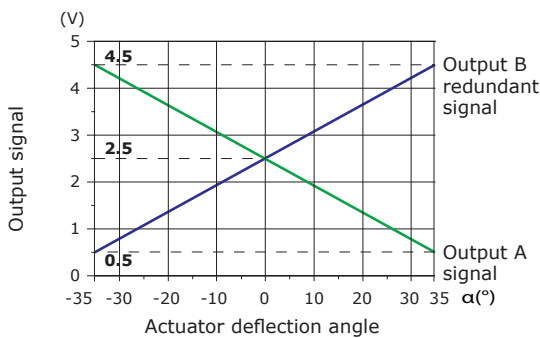
Supply voltage (max.)	12V 10 mA
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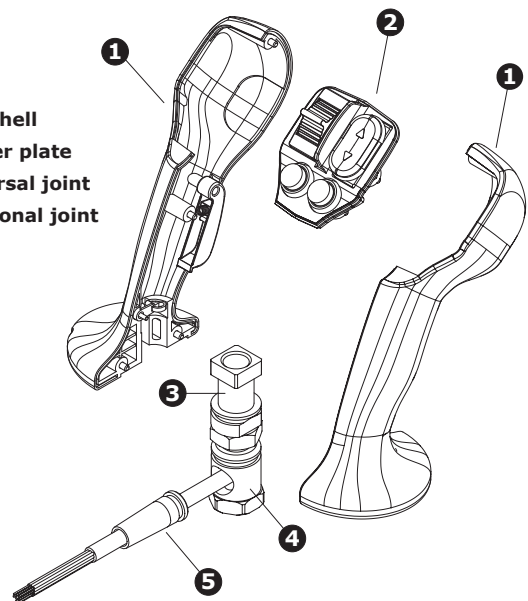
Dimensions



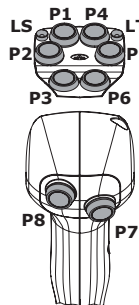
Proportional roller output detail



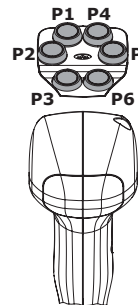
- 1) Half-shell
- 2) Holder plate
- 3) Universal joint
- 4) Additional joint
- 5) Cable



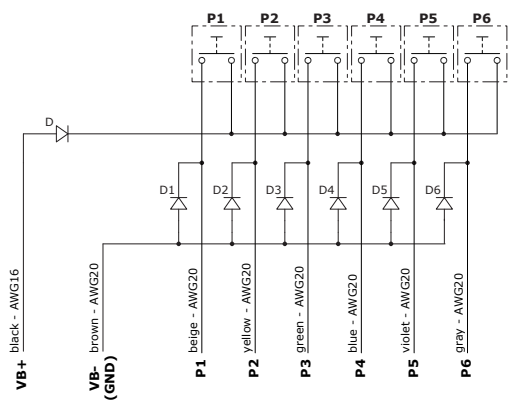
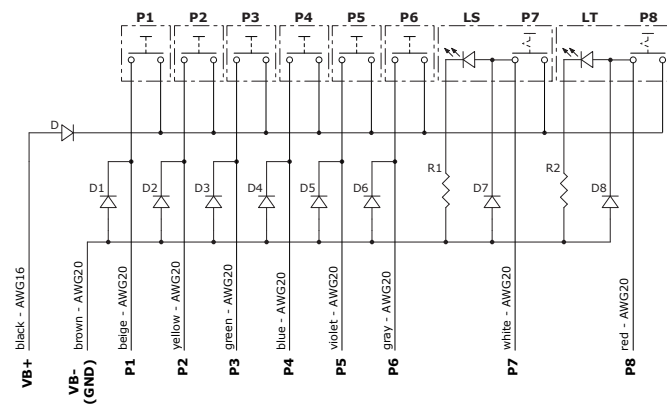
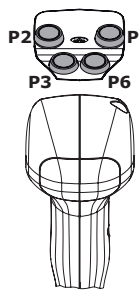
Without "dead man" trigger



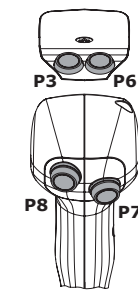
Code	2IM8020007
Description	PQC6002B9-1R1(T)D035-2R1(T)D035-3R1(T)D035-4R1(T)D035-5R1(T)D035-6R1(T)D035-7R3(A)D035-8R3(A)D035-SLR035-TLV035-12VDC
Holder plate	6 push-buttons with spring return (P1... P6), 2 LEDs (LS-LT)
Front zone	2 detent push-buttons (P7-P8)
Joint	Standard for SVM400-430 joystick



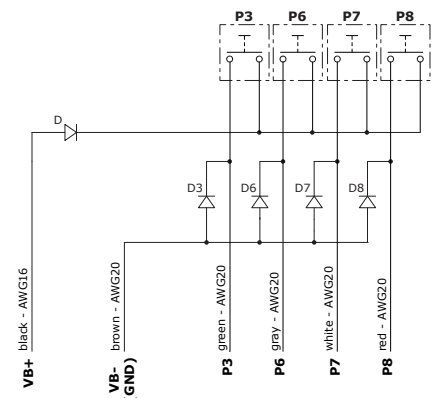
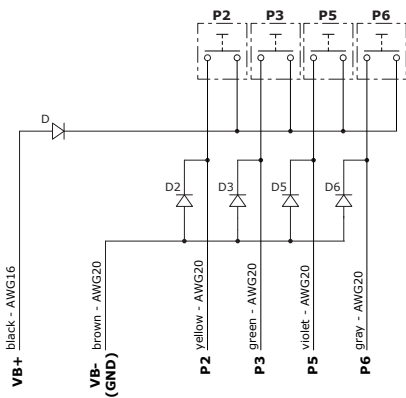
Code	2IM8010032
Description	PTB6000A9-1R1D035-2R1D035-3R1D035-4R1D035-5R1D035-6R1D035
Holder plate	6 push-buttons with spring return (P1... P6)
Front zone	-
Joint	Standard for SVM400-430 joystick

Code	2IM8010033
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	2IM8020008
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



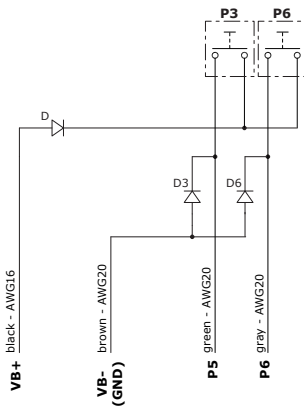
NOTE - For different joint see page 4.
For different handle configurations, contact our Sales Dept.

Configurations

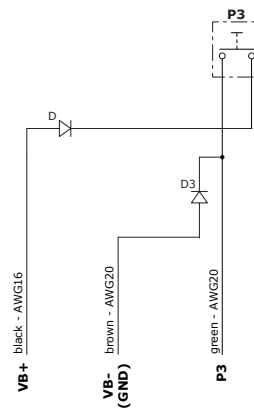
Without "dead man" trigger



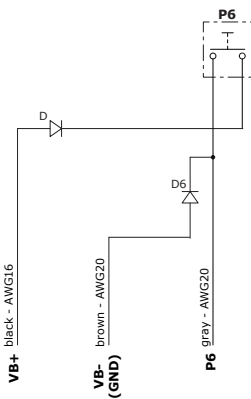
Code	2IM8010034
Description	PTB2000C9-3R1D035-6R1D035
Holder plate	2 push-buttons with spring return (P3-P6)
Front zone	-
Joint	Standard for SVM400-430 joystick



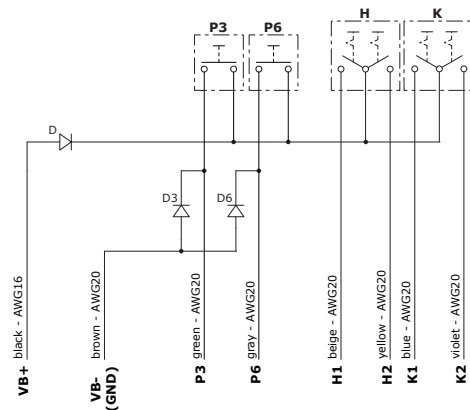
Code	2IM8010035
Description	PTB1000D9-3R1D035
Holder plate	1 push-button with spring return (P3)
Front zone	-
Joint	Standard for SVM400-430 joystick



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

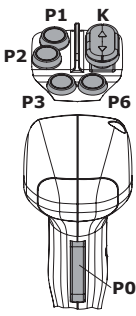


Code	2IM8010037
Description	PTB2020A9-3R1D035-6R1D035-HN6035-KN6035
Holder plate	2 push-buttons with spring return (P3-P6), 2 rocker switches with detent (H-K)
Front zone	-
Joint	Standard for SVM400-430 joystick

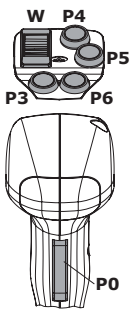


NOTE - For different joint see page 4.
For different handle configurations, contact our Sales Dept.

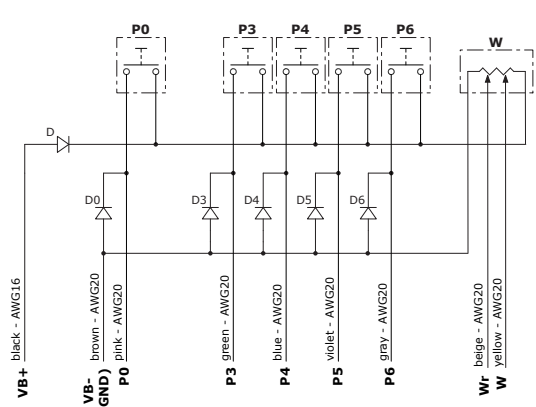
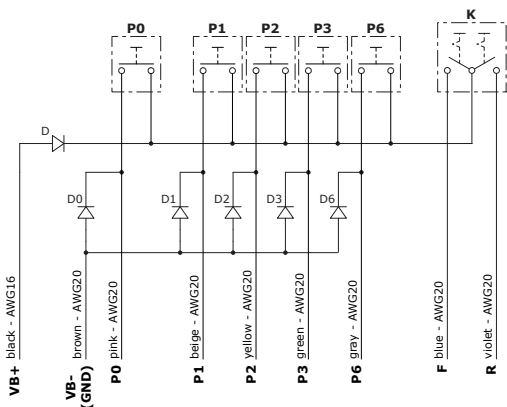
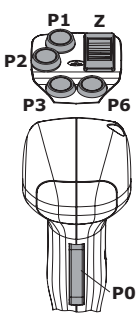
With "dead man" trigger



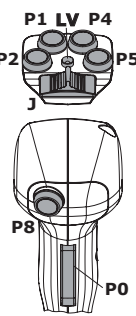
Code	2IM8100002
Description	PTA4010F9-0RD035-1R1D035-2R1D035-3R1D035-6R1D035-KRS035
Holder plate	4 push-buttons with spring return (P1-P2-3-P6), 1 FNR rocker switch with detent
Front zone	"Dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick



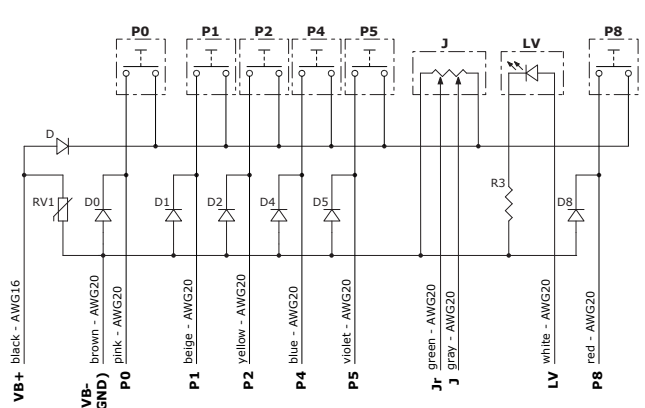
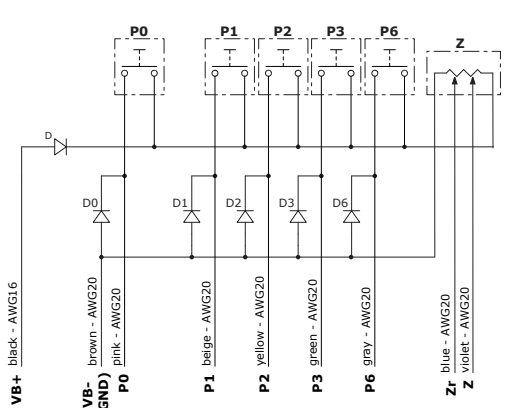
Code	2IM8600007
Description	PZTA4100D9-0RD035-3R1D035-4R1D035-5R1D035-6R1D035-WN130035
Holder plate	4 push-buttons with spring return (P3-P4-P5-P6), 1 proportional roller (W) with redundancy
Front zone	"Dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick

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



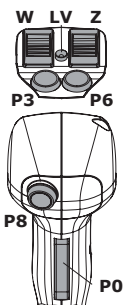
Code	2IM86M0000
Description	PZTM4101A9-0RD035-1R1D035-2R1D035-4R1D035-5R1D035-8R1D035-JN130035-VVL035-(12VDC)-(RV)
Holder plate	4 push-buttons with spring return (P1-P2-P4-P5), 1 proportional roller (J), 1 LED (LV)
Front zone	1 push-button with spring return (P8), "dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick



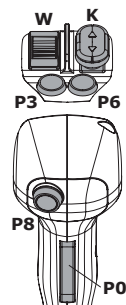
NOTE - For different joint see page 4.
For different handle configurations, contact our Sales Dept.

Configurations

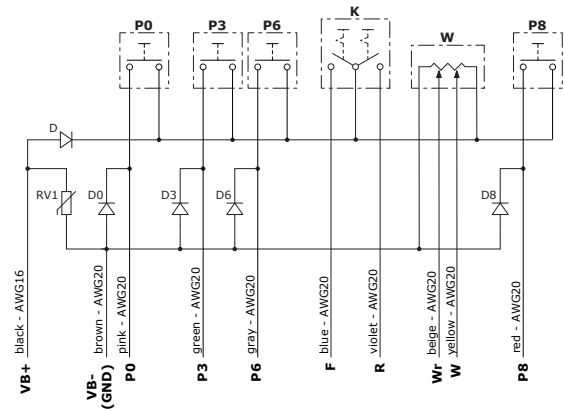
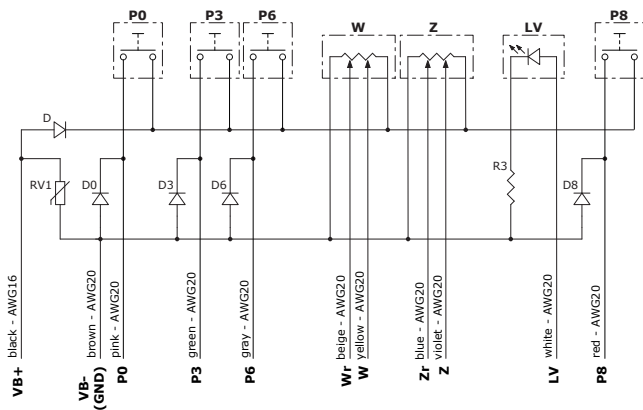
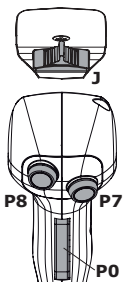
With "dead man" trigger



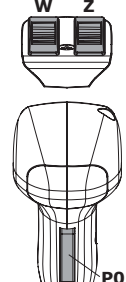
Code	2IM86M0001
Description	PZTM2200A9-ORD035-3R1D035-6R1D035-8R1D035-WN130035-ZN130035-VVL035-(12VDC)-(RV)
Hold plate	2 push-buttons with spring return (P3-P6), 2 proportional rollers (W-Z) with redundancy, 1 LED (LV)
Frontal zone	1 push-button with spring return (P8), "dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick



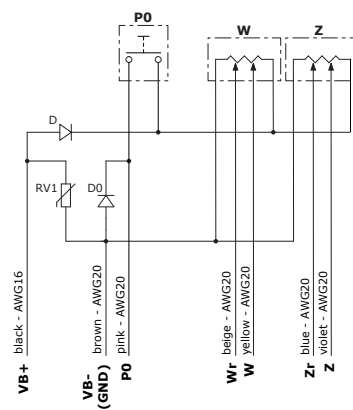
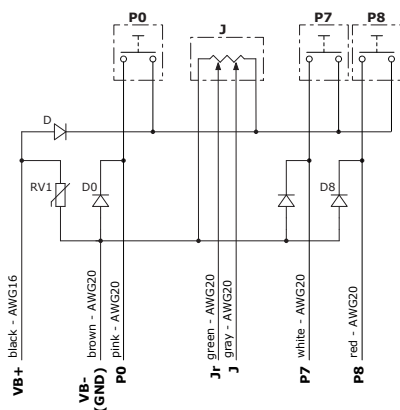
Code	2IM86M0002
Description	PZTM2110C9-ORD035-3R1D035-6R1D035-8R1D035-WN130035-KRS035
Hold plate	2 push-buttons with spring return (P3-P6), 1 proportional roller (W) with redundancy, 1 FNR rocker switch (K)
Frontal zone	1 push-button with spring return (P8), "dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick

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



Code	2IM8500007
Description	PZA0200B9-ORD035-WN130035-ZN130035-(RV)
Hold plate	2 proportional rollers (W-Z) with redundancy
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 load @ 12 VDC
Mechanical life (nr. of operations)	10 ⁶
Electric life (nr. of operations)	200x10 ³
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 load @ 12 VDC
Mechanical life (nr. of operations)	10 ⁶
Electric life (nr. of operations)	200x10 ³
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 load @ 12 VDC
Mechanical life (nr. of operations)	200x10 ⁵
Weather protection	IP44



"Dead man" trigger

Version	spring return
Contact type	NA
Current rating	2 A resistive load @ 12 VDC
Mechanical life (nr. of operations)	10 ⁶
Electric life (nr. of operations)	200x10 ³
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 ⁶
Operating force	2 N
Mechanical vibration	IEC 68-2
	EN 60068-2-29 (pulse)
Mechanical shock	400m/s ² x 6 ms, 100 times
Weather protection	IP67-IP69K
EMC compatibility	ISO 13766 - ISO 14982



Rocker switch

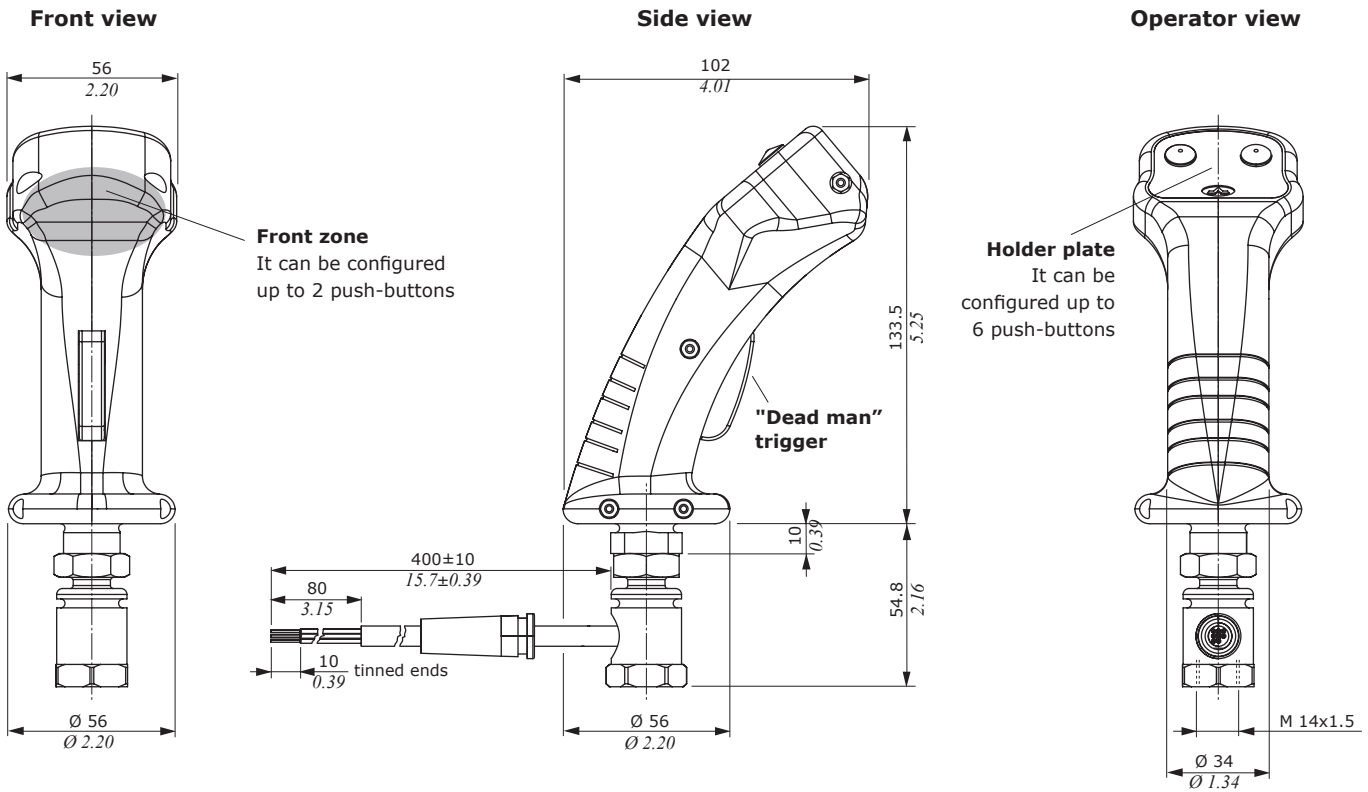
Version	with detent
Contact type	on/off
Current rating	2 A resistive load @ 12 VDC
Mechanical life (nr. of operations)	10 ⁵
Weather protection	IP44



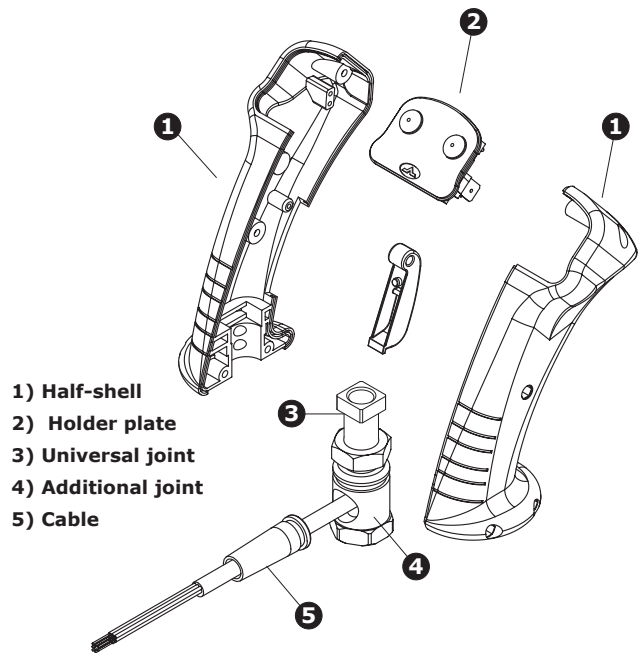
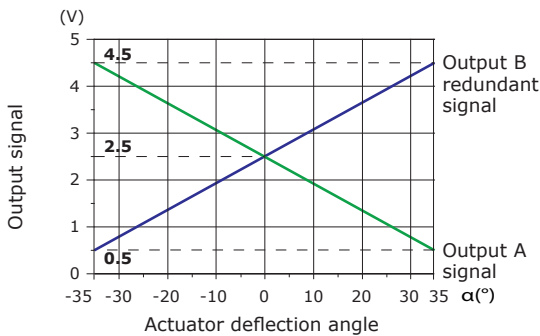
Cables

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

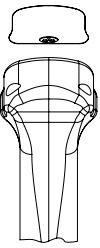
Dimensions



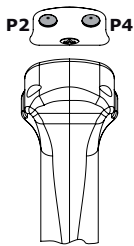
Proportional roller output detail



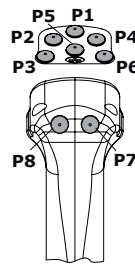
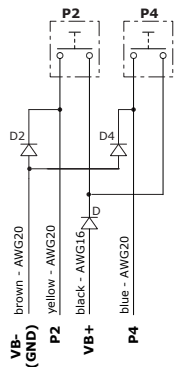
Without "dead man" trigger



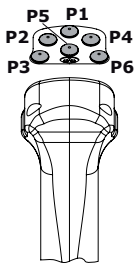
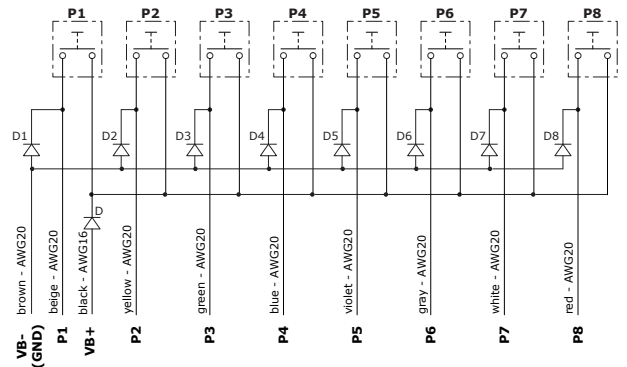
Code	2IM4000213
Description	HB009
Holder plate	-
Frontal zone	-
Joint	Standard for SVM400



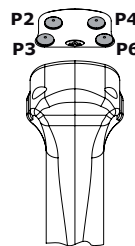
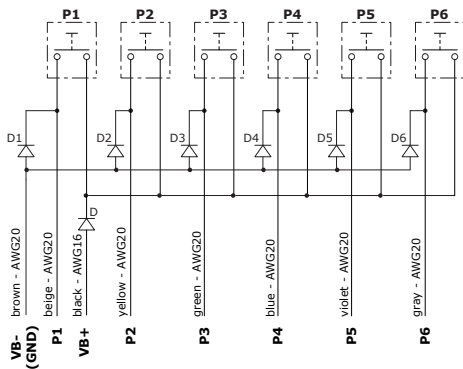
Code	2IM4000235
Description	HB029-2RD040-4RD040
Holder plate	2 push-buttons with spring return (P2-P4)
Frontal zone	-
Joint	Standard for SVM400-430 joystick



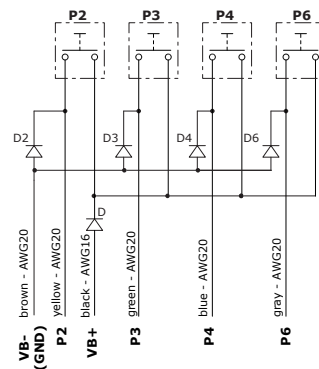
Code	2IM4200017
Description	HC069-1RD040-2RD040-3RD040-4RD040-5RD040-6RD040-7RD040-8RD040
Holder plate	6 push-buttons with spring return (P1...P6)
Frontal zone	2 push-buttons with spring return (P7-P8)
Joint	Standard for SVM400-430 joystick



Code	2IM4000201
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	2IM4000221
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



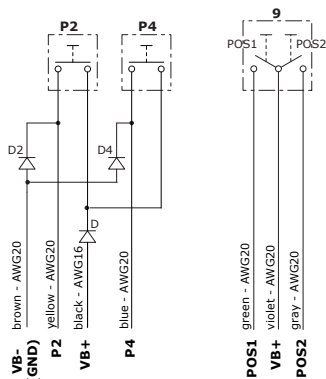
NOTE - For different joint see page 4.
For different handle configurations, contact our Sales Dept.

Configurations

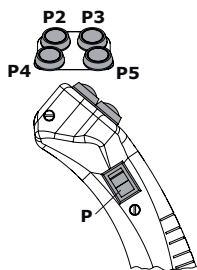
Without "dead man" trigger



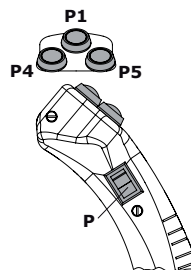
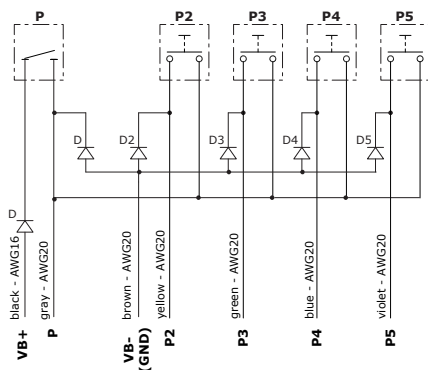
Code	2IM4000145
Description	HB529-2RD040-4RD040-9N040-CS
Holder plate	2 push-buttons with spring return (P1-P2), 1 rocker switch with spring return (9)
Frontal zone	-
Joint	Standard for SVM400-430 joystick



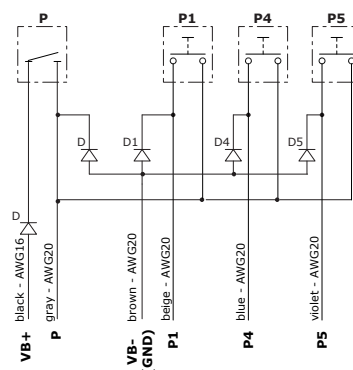
With ON/OFF switch



Code	2IM4700138
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

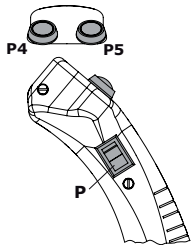


Code	2IM4700139
Description	HTPB039-PND040-1R1D040-4R1D040-5R1D040
Holder plate	3 push-buttons with spring return (P1-P4-P5)
Frontal zone	ON/OFF switch (P)
Joint	Standard for SVM400-430 joystick

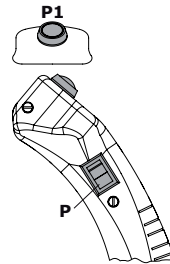
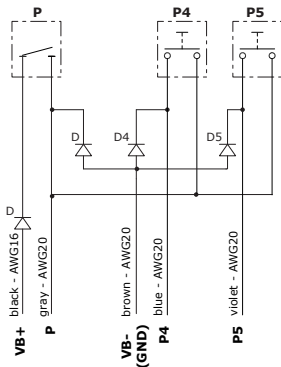


NOTE - For different joint see page 4.
For different handle configurations, contact our Sales Dept.

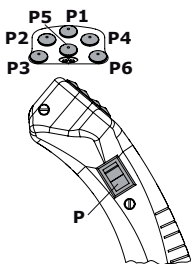
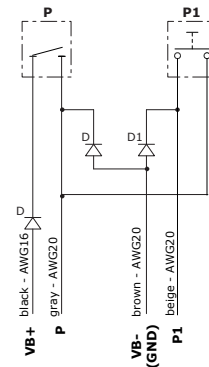
With ON/OFF switch



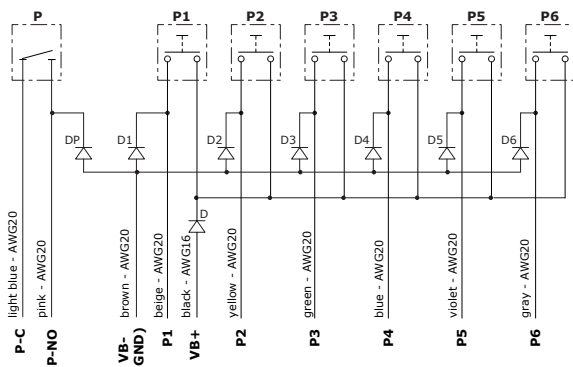
Code	2IM4700140
Description	HTPB029-PN040-4R1D040-5R1D040
Holder plate	2 push-buttons with spring return (P4-P6)
Frontal zone	ON/OFF switch (P)
Joint	Standard for SVM400-430 joystick



Code	2IM4700141
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



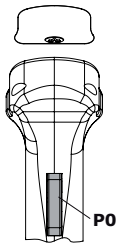
Code	2IM4000309
Description	HJ069-PN040-1RD040-2RD040-3RD040-4RD040-5RD040-6RD040
Holder plate	6 push-buttons with spring return (P1...P6)
Frontal zone	ON/OFF switch (P)
Joint	Standard for SVM400-430 joystick



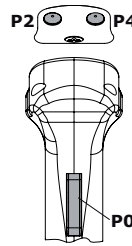
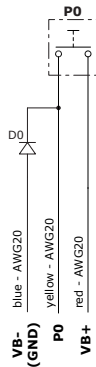
NOTE - For different joint see page 4.
 For different handle configurations, contact our Sales Dept.

Configurations

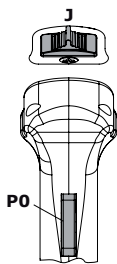
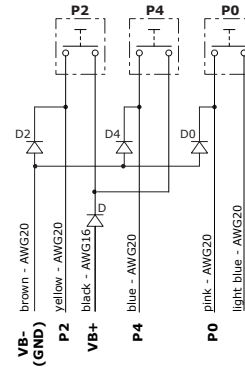
With "dead man" trigger



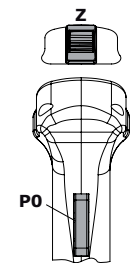
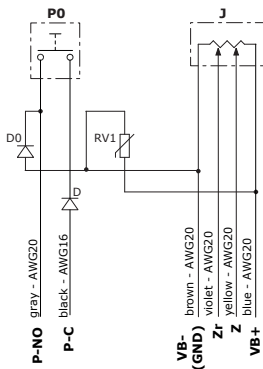
Code	2IM4100075
Description	HA009-0RD040
Holder plate	-
Frontal zone	"Dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick



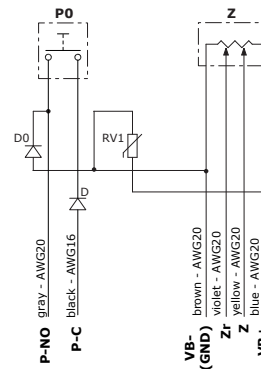
Code	2IM4100109
Description	HA029-0RD040-2RD040-4RD040
Holder plate	2 push-buttons with spring return (P2-P4)
Frontal zone	"Dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick



Code	2IM4800022
Description	HZA9-0RD040-JN130040-(RV)
Holder plate	Proportional roller (J) with redundancy
Frontal zone	"Dead man" trigger (P0)
Joint	Standard for SVM400-430 joystick



Code	2IM4800023
Description	HZA9-0RD040-ZN130040-(RV)
Holder plate	Proportional roller (Z) with redundancy
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

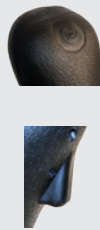
General features

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 ⁶
Electric life (nr. of operations)	5x10 ⁵
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 ⁷



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 ⁶
Electric life (nr. of operations)	25x10 ³
Weather protection	IP67 with handle mounting



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 ⁶
Operating force	2 N
Mechanical vibration	IEC 68-2
Mechanical shock	EN 60068-2-29 (pulse 400m/s ² x 6 ms, 100 times)
Weather protection	IP67-IP69K
EMC	ISO 13766 - ISO 14982



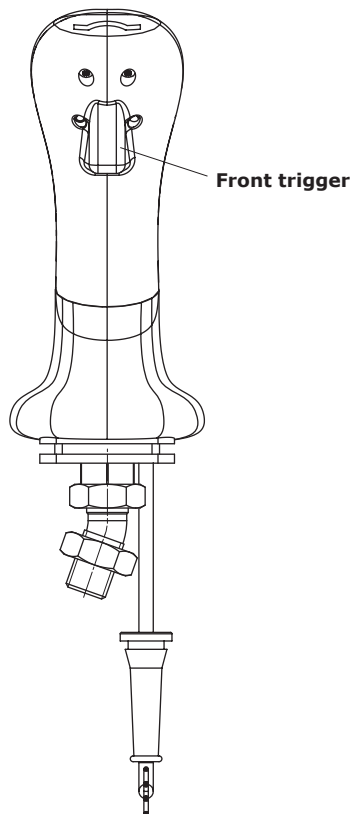
Cables

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

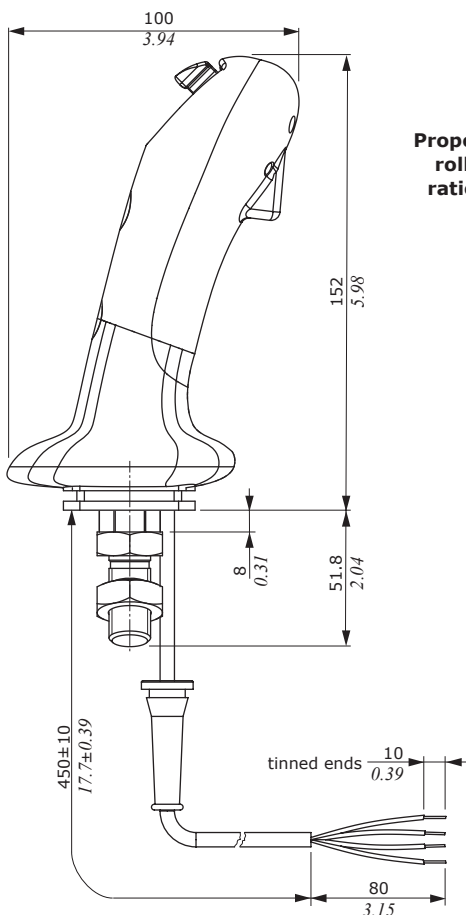
Dimensions

With proportional roller with ratiometric signal

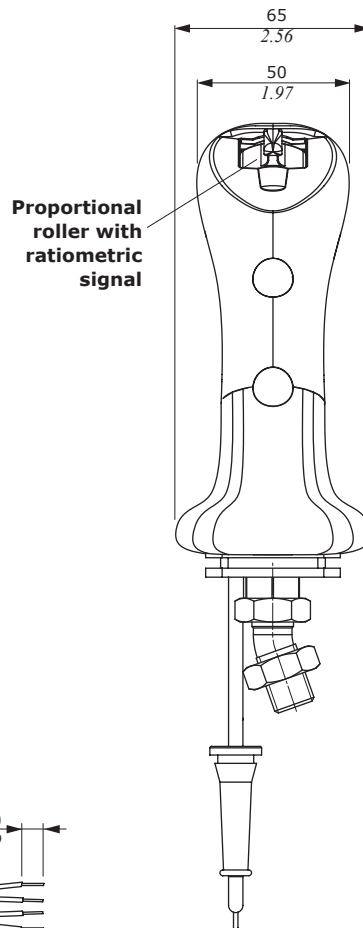
Front view



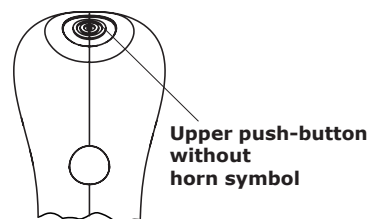
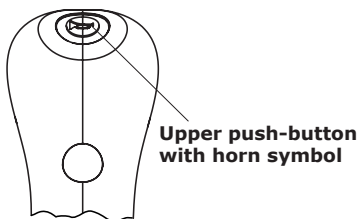
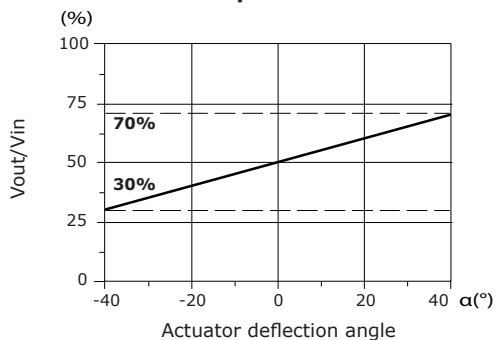
Side view



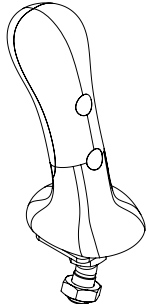
Operator view



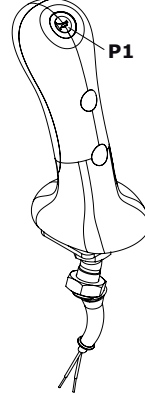
Proportional roller output detail




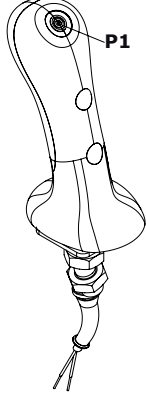
With proportional roller with ratiometric signal



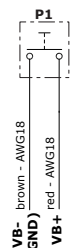
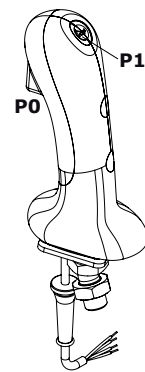
Code	2IM500000
Description	S007
Configuration	Without control devices
Joint	Sloping 19° left for SVM400-430 joystick



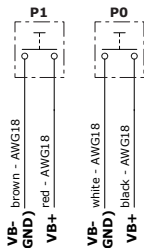
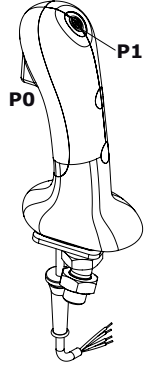
Code	2IM510002
Description	S107-045
Configuration	With upper push-button with horn symbol (P1)
Joint	Sloping 19° left for SVM400-430 joystick

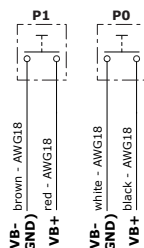
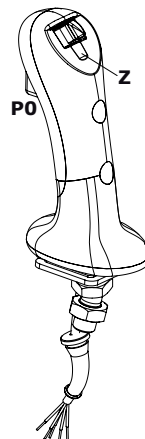
Code	2IM5120001
Description	S10A8-045
Configuration	With upper push-button without horn symbol (P1)
Joint	Sloping 19° right for SVM400-430 joystick

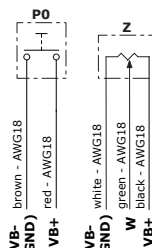
Code	2IM5210002
Description	S218-045
Configuration	With upper push-button with horn symbol (P1) and front trigger (P0)
Joint	Sloping 19° right for SVM400-430 joystick

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

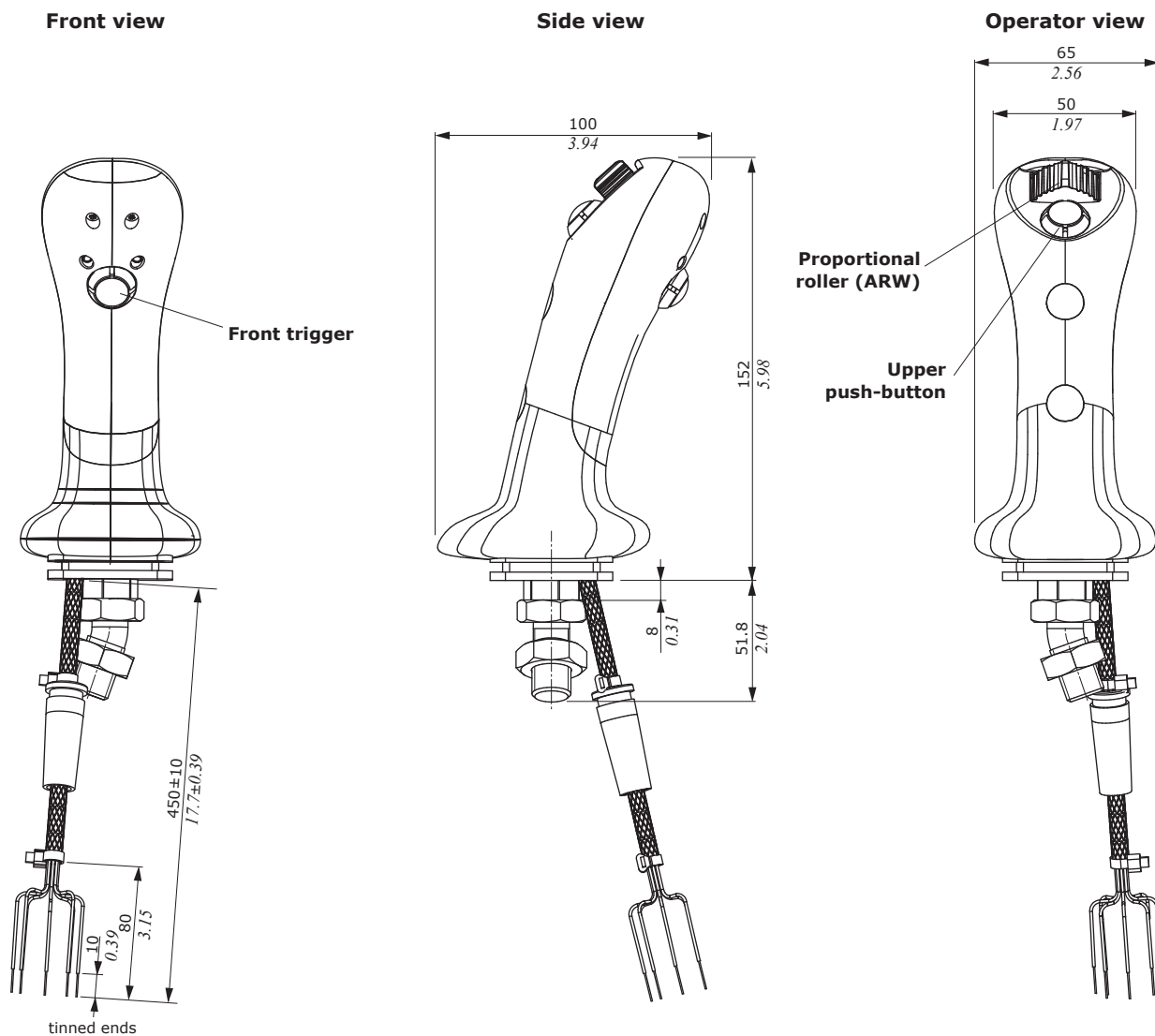
Code	2IM5110003
Description	S117-045
Configuration	With proportional roller (Z) and front trigger (P0)
Joint	Sloping 19° left for SVM400-430 joystick



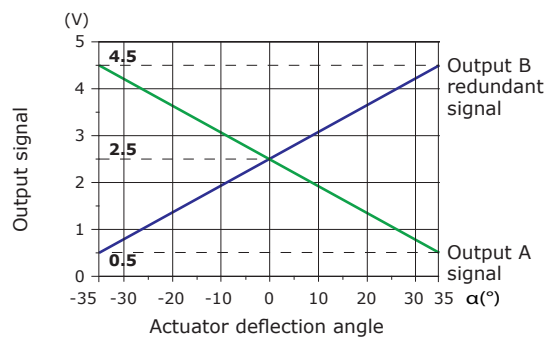
NOTE - For different joint see page 4.
For different handle configurations, contact our Sales Dept.

Dimensions

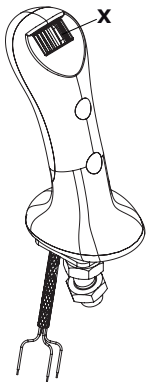
With ARW proportional roller



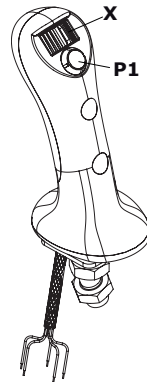
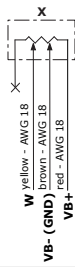
Proportional roller output detail



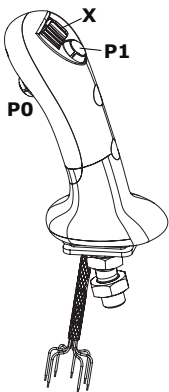
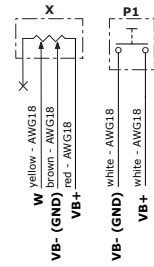
With ARW proportional roller



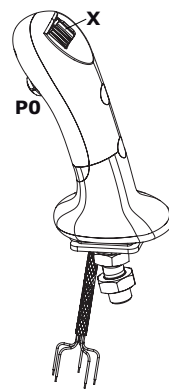
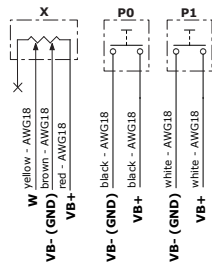
Code 2IM530000
Description SZ8-XG122045
Configuration With ARW proportional roller (X)
Joint Sloping 19° right for SVM400-430 joystick



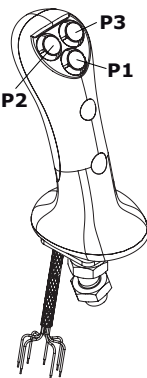
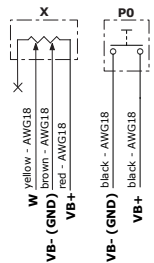
Code 2IM532000
Description SZTB8-1G4045-XG122045
Configuration With ARW proportional roller (X) and thumb type upper push-button (P1)
Joint Sloping 19° right for SVM400-430 joystick



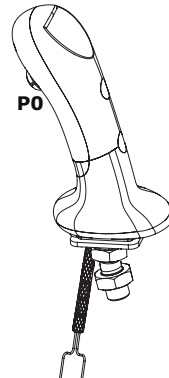
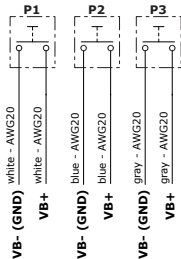
Code 2IM5330003
Description SZTC8-0G4045-1G4045-XG122045
Configuration With ARW prop.roller (X), thumb type upper push-button (P1) and front trigger (P0)
Joint Sloping 19° right for SVM400-430 joystick



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



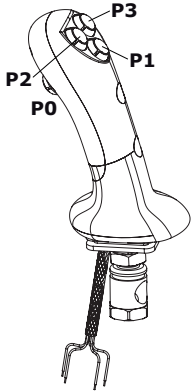
Code 2IM5410001
Description STA8-0G4045
Configuration With front trigger (P0)
Joint Sloping 19° right for SVM400-430 joystick



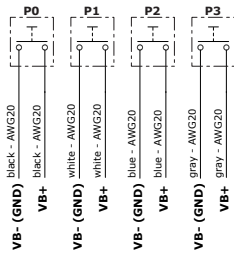
NOTE - For different joint see page 4.
 For different handle configurations, contact our Sales Dept.

Configurations

With ARW proportional roller



Code	2IM5430000
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

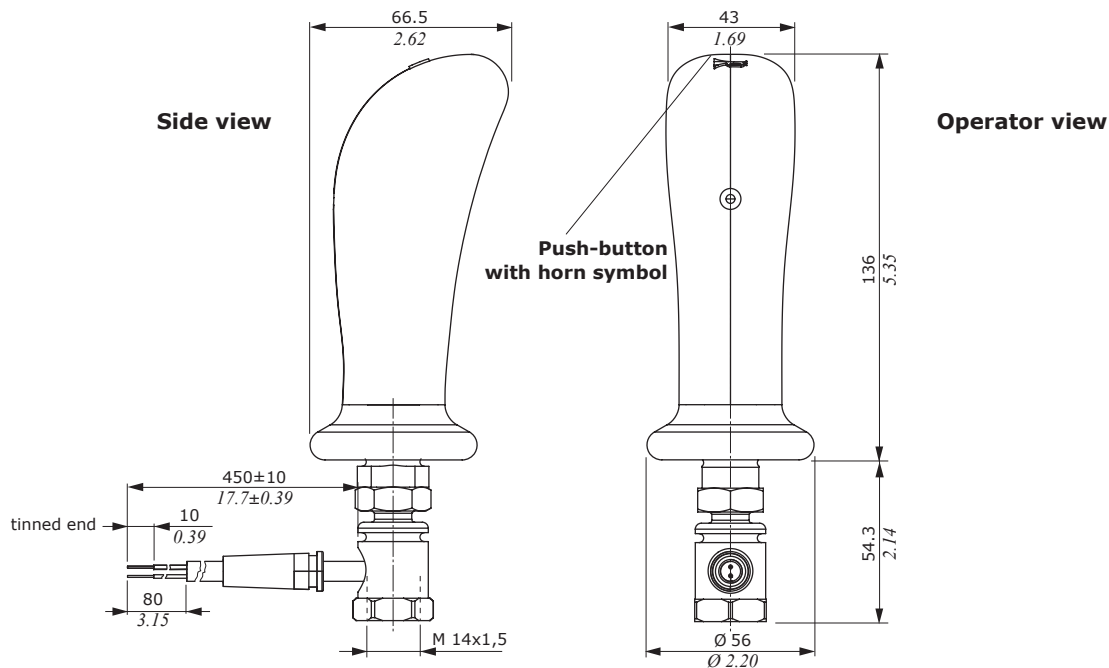
Version	spring return
Contact type	NO
Current rating	4 A resistive load @ 24 VDC
Electric life (nr. of operations)	10 ⁴
Weather protection	IP44



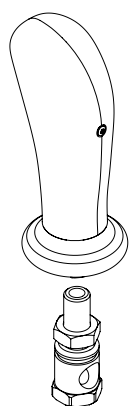
Cables

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

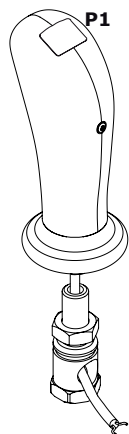
Dimensions



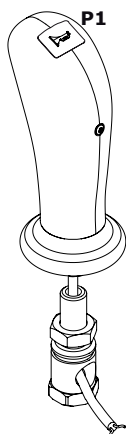
Configurations



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



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



Code	5IMP031160
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 Ø 30 mm / Ø 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

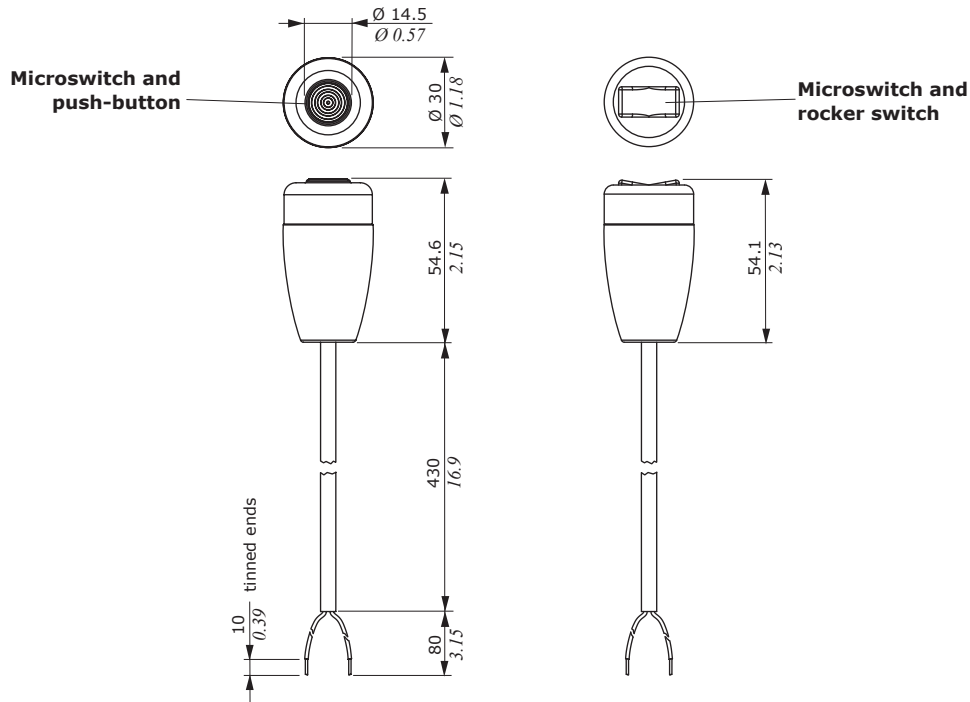
ON/OFF push-button

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

Cables

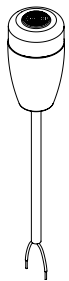
Conductor material	Copper with tinned ends
Conductor section	AWG20
Insulating material	PVC
Protective covering material	PVC

Dimensions

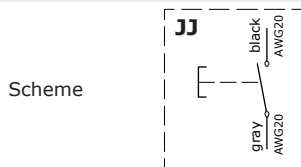


Configurations

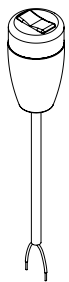
Push-button control



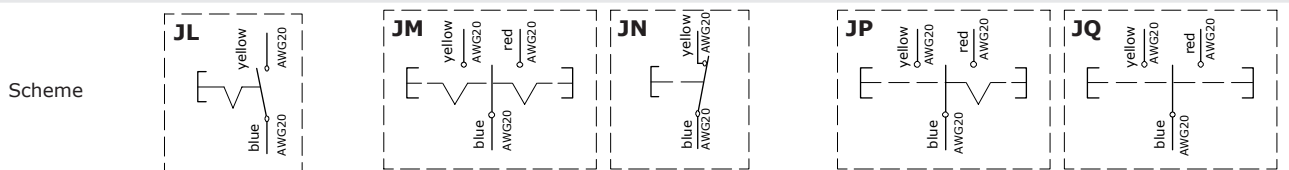
Code	5IMP110000
Description	JJI/C
Configuration	Push-button control



Rocker switch control



Code	5IMP210000	5IMP310000	5IMP410000	5IMP510000	5IMP610000
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 Ø 39 mm / Ø 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

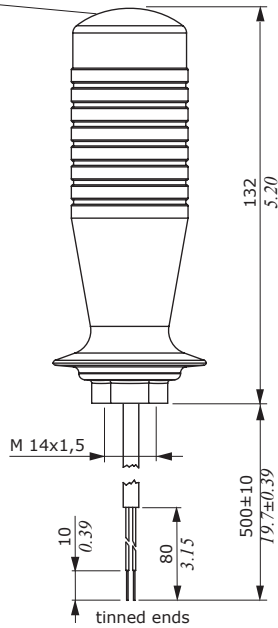
Version	spring return
Contact type	NA
Current rating	6 A resistive load 4 A inductive load @ 30 VDC
Mechanical life (nr. of operations)	3x10 ⁶
Electric life (nr. of operations)	10 ⁵
Weather protection	IP54

Cables

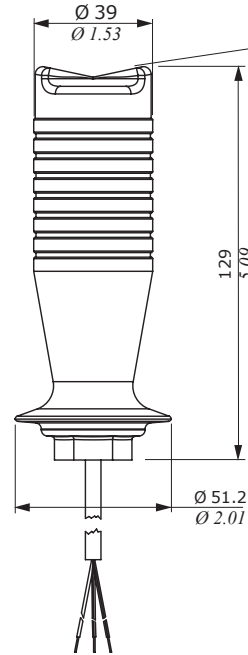
Conductor material	Copper with tinned ends
Conductor section	AWG20
Insulating material	PVC
Protective covering material	PVC

Dimensions

Microswitch and push-button

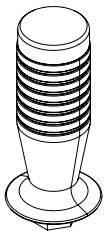


Microswitch and rocker switch



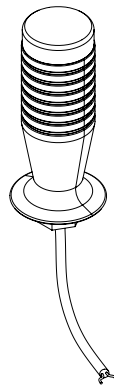
Configurations

No push-button control



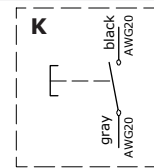
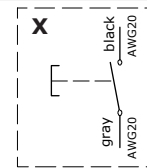
Code	5IMP100000
Description	WI
Configuration	Senza pulsante

Push-button control

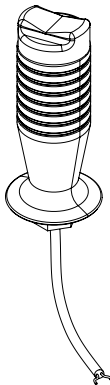


Code	5IMP200000	5IMP500000
Description	XI/C	KI/C
Configuration	Tipo (ON)/OFF	Tipo protetto (ON)/OFF

Scheme

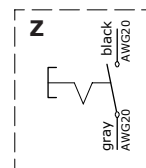
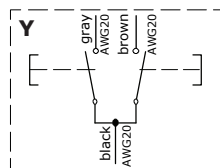
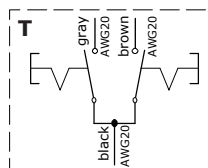


Rocker switch control



Code	5IMP210000	5IMP310000	5IMP410000
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

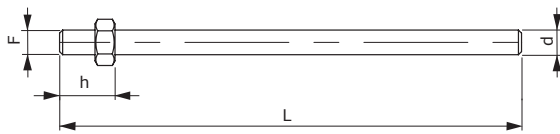
General features

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

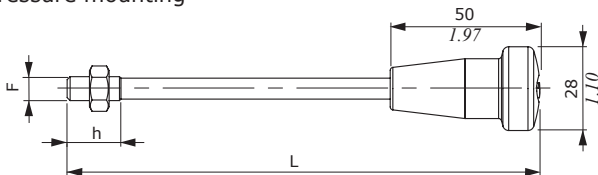
Without microswitches

AL00: without handles



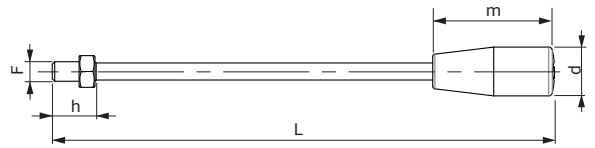
F	h (thread)	L	d	Code
M8	19-0.75	120-4.72	8-0.31	170011214
		150-5.91		170011215
		200-7.87		170011220
		250-9.84		170011225
M10	24-0.94	150-5.91	10-0.39	170012215
		200-7.87		170012220
		250-9.84		170012224
		300-11.8		170012230

AL02: black moulded thermoplastic resin knob with pressure mounting



F	h (thread)	L	Code
M8	18-0.71	159-6.26	170011216
M10	22-0.87	159-6.26	170012016
		209-8.23	170012022
M12	28-1.10	219-8.62	170013021

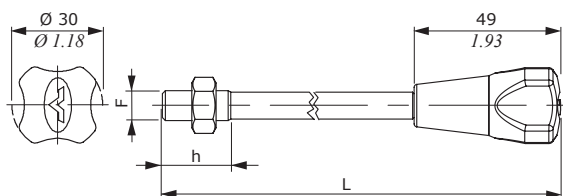
AL01: black cylindrical thermoplastic resin knob with pressure mounting



F	h (thread)	L	d	m	Code
M8	18-0.71	127-5.00	20-0.98	50-1.97	170011012
		157-6.18			170011015
		206-8.11			170011020
M10	22-0.87	256-10.1	22-0.87	60-2.36	170011226
		306-12.0			170011230
		356-14.0			170011236
		406-16.0			170011241
		156-6.14			170012015
		206-5.00			170012020
		256-10.1			170012025
306-12.0	170012030				
M12	28-1.10	356-14.0	26-1.02	72-2.83	170012035
		406-16.0			170012040
		206-8.11			170013020
		256-10.1			170013025
M16	40-1.57	306-12.0	31-1.22	102-4.02	170013030
		356-14.0			170013035
		406-16.0			170013040
M16	40-1.57	355-1.38	31-1.22	102-4.02	170015030
		405-15.9			170015035
		455-17.9			170015040

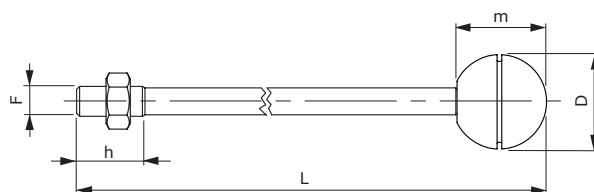
Without microswitches

AL03: red moulded thermoplastic resin knob with pressure mounting



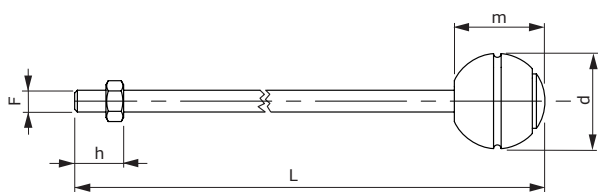
F	h (thread)	L	Code
M8	18-0.71	158-6.22	170011217
M10	22-0.87	158-6.22	170012017
		208-8.19	170012023

AL04: black spherical thermosetting resin knob with pressure mounting



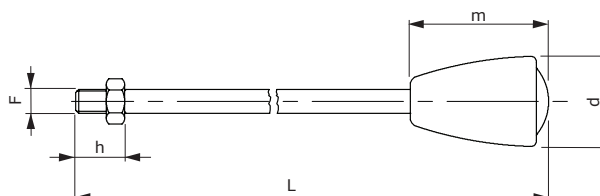
F	h (thread)	L	d	m	Code
M10	22-0.87	210-8.27	30-1.18	28-1.10	170012223
		260-10.2			170012226
M12	28-1.10	220-8.66	40-1.57	38.5-1.52	170013019
		270-10.6			170013027

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



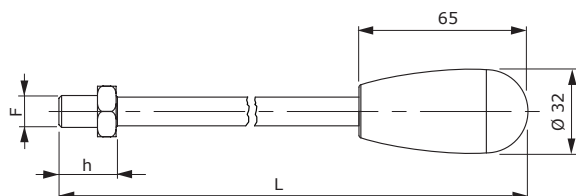
F	h (thread)	L	d	m	Code
M8	19-0.75	220-8.66	35-1.38	33.5-1.32	170011255
M10	22-0.87	220-8.66	40-1.57	38.5-1.52	170012221

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



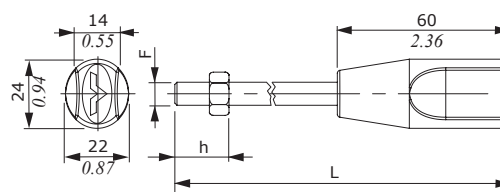
F	h (thread)	L	d	m	Code
M8	19-0.75	163-6.42	32-1.26	45-1.77	170011219
		213-8.39			170011222
M10	22-0.87	224-8.82	32-1.26	49-1.93	170012222

AL08: Black ogival thermosetting resin knob with M10 thread mounting



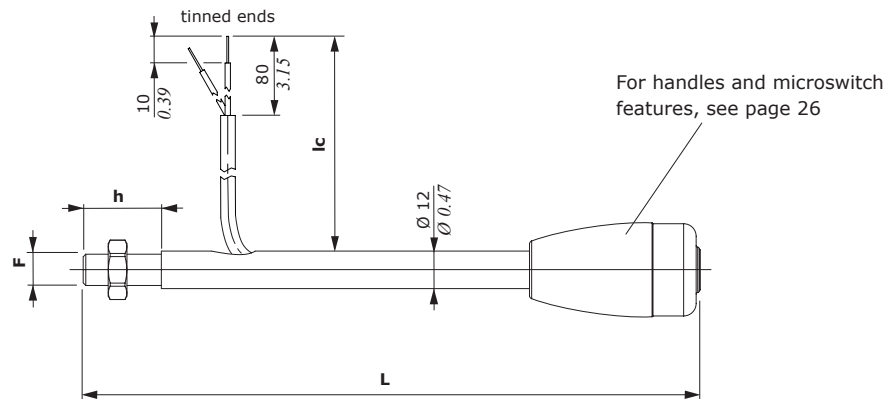
F	h (thread)	L	Code
M12	22-0.87	160-6.30	170013115
		210-8.27	170013120
		260-10.2	170013125
		310-12.2	170013130
		361-14.2	170013135

AL11: black thermoplastic resin knob, injection molded on rod



F	h (thread)	L	Code
M8	19-0.75	162-6.38	170408150
		212-8.35	170408200
		250-9.84	170408250
M10	24-0.94	165-6.50	170410150
		215-8.46	170410200
		265-10.4	170410250

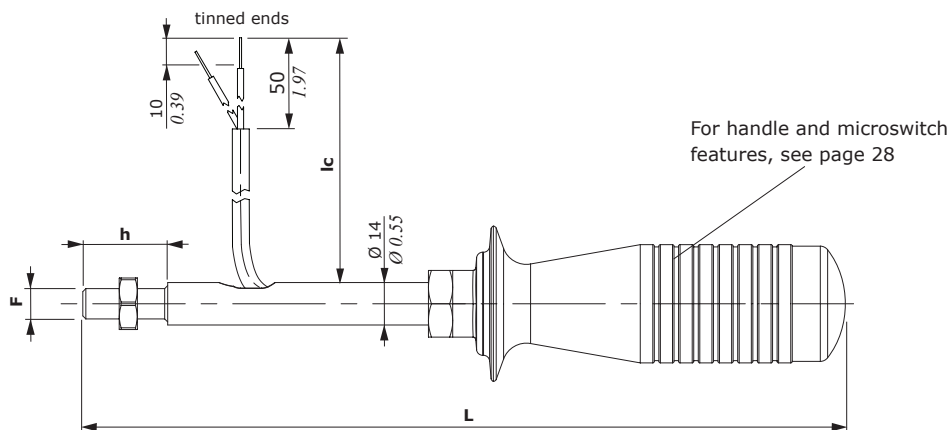
With microswitch and J series handle



Type	Knob (page 32)	h (thread)	F=M10			F=M12			
			L	lc	Code	h (thread)	L	lc	Code
AL24	type JJ	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	type JL	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	type JM	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	type JN	25-0.98	150-5.91	480-18.9	1702N2415	25-0.98	200-7.87	430-16.9	1702N3429
			200-7.87	430-16.9	1702N2420		250-9.84	380-15.0	1702N3425
AL28	type JP	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	type JQ	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 lenght, contact our Sales Dept.

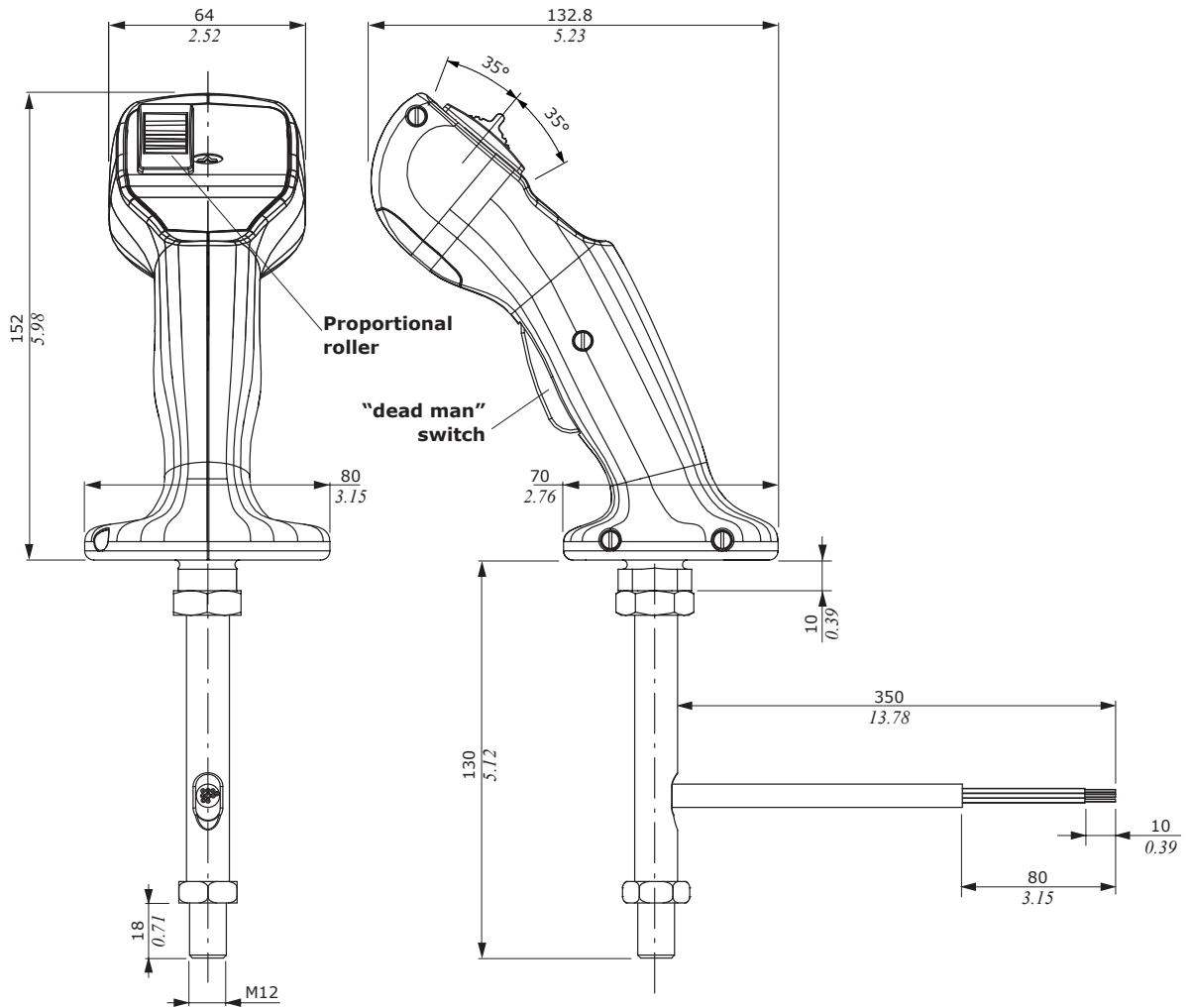
With microswitch and 10 Series handle



Tipo	Knob (page 34)	F=M10				F=M12			
		h (thread)	L	lc	Code	h (thread)	L	lc	Code
AL14	tipo W	28-1.10	250-9.84	/	1701W2525	25-0.98	250-9.84	/	1701W3520
			250-9.84	425-16.7	1701X2525		250-9.84	425-16.7	1701X3525
AL15	tipo X	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	tipo Z	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	tipo Y	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	tipo K	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	tipo T	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

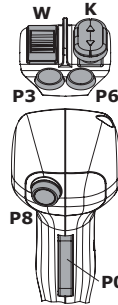
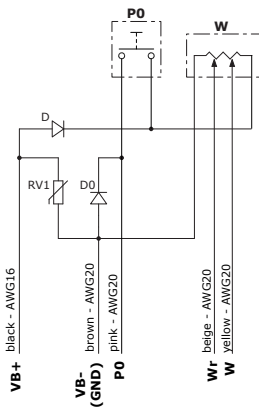


Handlever with P series handle

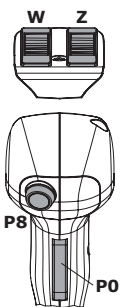
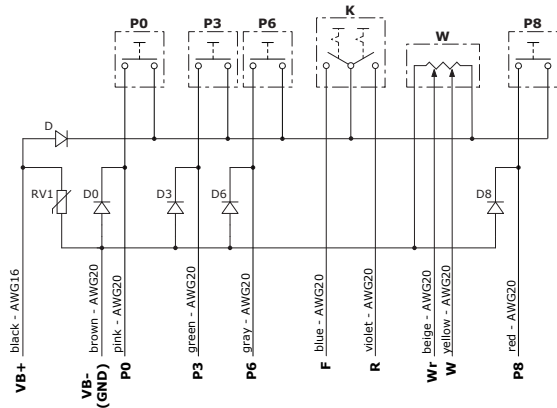
Configurations



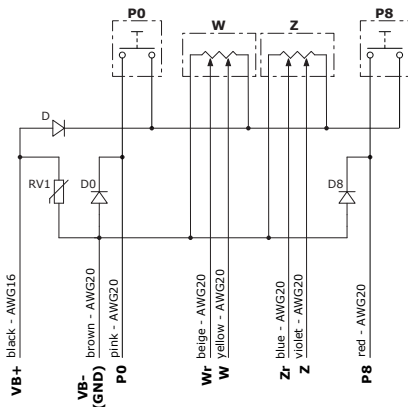
Code	170800068
Description	AL80-PZA0100D0-ORD035-WN130035(RV)-M12x280
Plate	1 proportional roller (W) with redundancy
Frontal zone	"Dead man" switch (P0)
Lever	M12x280



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



Code	170800036
Description	AL80-PZMM0200B0-ORD035-8R2D035-WN130035-ZN130035-(D2F12)-(TC-PROT)-M12x280
Plate	2 proportional rollers (W-Z) with redundancy
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.



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