

SVM hydraulic joysticks with electromagnetic detent

SVM150 / SVM450 / SVM600

- Single, double and combined functions
- Wide range of handles available

Working conditions

This catalogue shows technical specifications and diagrams measured through mineral oil of $46 \text{mm}^2/\text{s}$ - 46 cSt viscosity at 40 °C - 104 °F temperature.

Nominal flow rating		from 5 to 20 l/min - from 1.32 to 5.28 USgpm					
5	on Diplot port	. , ,					
Max. feeding pressure	on P inlet port	from 30 to 100 bar - from 435 to 1450 psi					
Max. backpressure	on T outlet port	3 bar - <i>43.5 psi</i>					
Max. hysteresis		0.5 bar - <i>7.25 psi</i>					
Internal leakage (all ports)	at 30 bar - <i>435 psi</i> , P⇒T	from 2.5 to 4.5 cm 3 /min - from 0.15 to 0.27 in 3 /min					
Fluid		Mineral oil					
Fluid temperature	with NBR (BUNA-N) seals	from -10 °C to 80 °C - from 14 °F to 176 °F					
	operating range	from 15 to 75 mm ² /s - from 15 to 75 cSt					
Viscosity	min.	12 mm²/s - <i>12 cSt</i>					
	max.	400 mm²/s - <i>400 cSt</i>					
Max. contamination level		-/15/12 - ISO 4406 - NAS1638 class 6					
Ambient temperature	without electric devices	from -40 °C to 60 °C - $from~40$ °F to 140 °F					
Ambient temperature	with electric devices	from -20°C to 50°C - from -4 °F to 122 °F					
Tie rod tightening torque (wrench 13)	only for SVM150	24 Nm - 17.7 lbft					

 $\ensuremath{\mathsf{NOTE}}$ - for different conditions please contact our Sales Department.

REFERENCE STANDARD									
		BSP	UN-UNF						
THREAD ACCORDING TO		ISO 228/1	ISO 263						
THREAD ACCORDING TO		BS 2779	ANSI B1.1 unified						
	ISO	1179	11926						
CAVITY DIMENSION ACCORDING TO	SAE		J11926						
	DIN	3852-2 X or Y shape							

PORT THREADING											
PORTS		Fitting tightening torque									
	UNI EN ISO 1179	UNI EN IS	50 11926-2	Nm	lbft						
		SVM150	SVM450-SVM600								
P inlet	G 1/4	7/16-20 (SAE 4)	9/16-18 (SAE 6)	30	22.13						
Ports	G 1/4	7/16-20 (SAE 4)	9/16-18 (SAE 6)	30	22.13						
T outlet	G 1/4	7/16-20 (SAE 4)	9/16-18 (SAE 6)	30	22.13						

NOTE – These torques are recommended. Assembly tightening torque depends on many factors, including lubrification, coating and surface finishing. The manufacturer has to be consulted.

Dimensions and hydraulic circuit -

Single axis type

Without detent or with detent on single working port or both working ports

Features

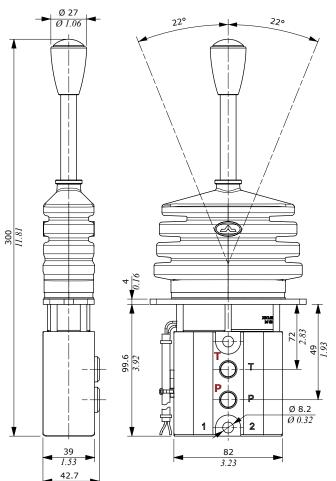
ELECTROMAGNET

Nominal current. : 0.69 A - 12 VDC

: 0.345 A - 24VDC

Coil insulance : Class H
Weather protection : IP65
Insertion : 100%

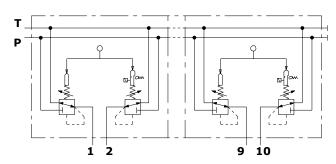
118 4.64 36.7 1.44 100 3.94



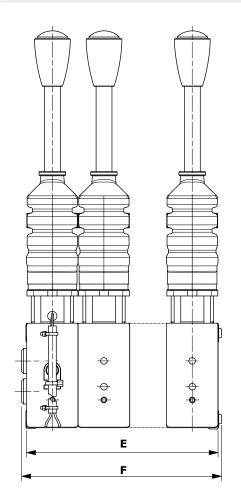
SVM150/n type

Multiple function configuration; up to 5 sections

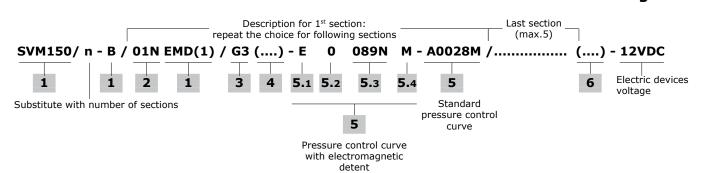
Hydraulic circuit

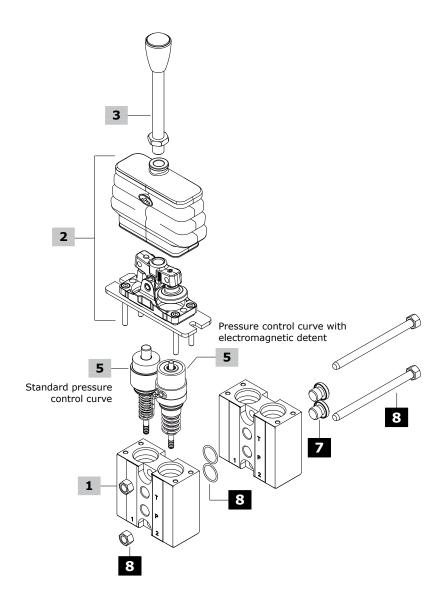


TYPE	E	•	ı	=
IIPL	mm	in	mm	in
SVM150/2	78	3.07	84	3.31
SVM150/3	117	4.61	123	4.84
SVM150/4	156	6.14	162	6.38
SVM150/5	195	7.68	201	7.91



Ordering codes





Ordering codes

1 Body kit *

TYPE: **SVM150-B/EMD(0)** CODE: 5CO3132300

DESCRIPTION: Body without detent

TYPE: **SVM150-B/EMD(1)** CODE: 5CO3132301

DESCRIZIONE: Body with detent arrangement on port 1

TYPE: **SVM150-B/EMD(2)** CODE: 5CO3132302

DESCRIPTION: Body with detent arrangement on port 2

TYPE: **SVM150-B/EMD(1-2)** CODE: 5CO3132303 DESCRIPTION: Body with detent arrangement on ports 1 and 2

2 Detent configuration

Complete with rubber bellow and fixing wrapper

TYPE CODE DESCRIPTION

O1N(OD) 5CIN1010DN Spring return to neutral position, without

detent arrangement

01N(1D) 5CIN10110ND Spring return to neutral position, single

detent arrangement; right or left position
is defined by pressure control curve position

01N(2D) 5CIN10120ND Spring return to neutral position, double

detent arrangement

 $\label{eq:NOTES: For detent arrangement on different ports, please contact$

our Sales Department.

The text between () can be omitted from composition description.

3 Standard handlevers

TYPE CODE DESCRIPTION

G3 5AST271218G Ogival with portlight, straight rod

(STANDARD)

G3(15) 5AST371227G Ogival with portlight, 15° sloping rod
 G3(30) 5AST371228G Ogival with portlight, 30° sloping rod
 E 5AST371215E Spherical with portlight, 15° sloping rod

4 Handle position

Only for sploping rod

TYPE DESCRIPTION

(0) Handlever oriented towards plugged P and T ports

(90) Handlever oriented towards port 1

(180) Handlever oriented towards open P and T ports

(270) Handlever oriented towards port 2

5 Pressure control curves

For list available see from page 63

5.1 Curve type

TYPE DESCRIPTION

A Without pre-feeling, without solenoid
 B With pre-feeling, without solenoid
 C With solenoid 24VDC and pre-feeling
 D With solenoid 24VDC, without pre-feeling
 E With solenoid 12VDC, with pre-feeling
 F With solenoid 12VDC, without pre-feeling
 G With solenoid 24VDC and pre-feeling after step

5.2 Typology of curves

TYPE DESCRIPTION

With step

Without step

5.3 Curve identification

Progressive number,

5.4 Return springs

TYPE DESCRIPTION

M Operation range from 18 to 25.5 N - from 4.04 to 5.73 lbf
 A Operation range from 23 to 35.2 N - from 5.17 to 7.91 lbf

6 Connector

Configurations with detent or microswitch are provided with wires with tin-plate terminals. For connectors please contact our Sales Department.

7 Closing plugs *

CODE DESCRIPTION

3XTAP719150 G1/4 plug for rear ports closing (n. 2 plugs)

8 Assembling kit

This kit contains tie rods, nuts and O-ring seals.

CODE DESCRIPTION

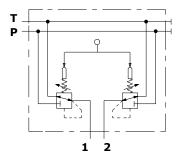
5TIR108081 Assembling kit for SVM150/2 5TIR108127 Assembling kit for SVM150/3 5TIR108159 Assembling kit for SVM150/4 5TIR108199 Assembling kit for SVM150/5

-Configuration option

Detent configuration

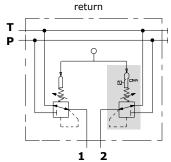
01/0D type

Spring return, without detent



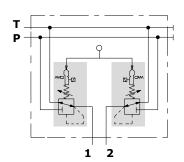
01/1D type

Single detent on port 2 (detent on port 1 on request), spring



01/2D type

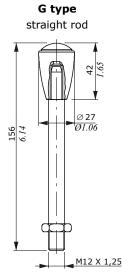
Double detent on ports 1 and 2, spring return



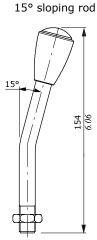
Standard handlevers

G type: Ogival handles with customizable portlight. It's possible to insert labels with specific machine functions (for example: lifting function): please contact our Sales Department.

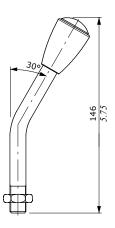
E type: Spherical handle customizable as G type.



G(15) type

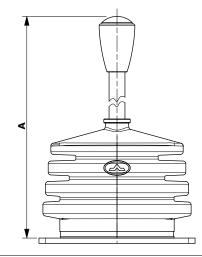


G(30) type 30° sloping rod



E type 15° sloping. rod

Ø 40 Ø1.57 15° 951 17° M12 × 1,25



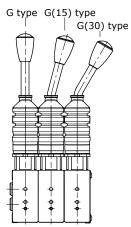
Handlever Type	А						
	mm	in					
G3 straight	196	7.72					
G3 15° sloping	184	7.24					
G3 30° sloping	176	6.23					
E 15° sloping	186	7.32					

Configuration option-

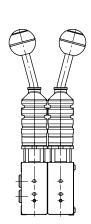
Standard handlevers

Mounting and orientation examples

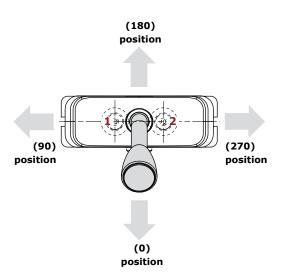
G type pilot control valve with 3 sections



E type pilot control valve with 2 sections



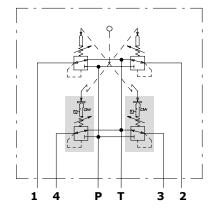
Sloping rod position

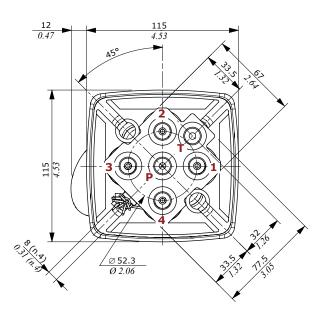


Dimensions and hydraulic circuit

hydraulic circuit

Example detent on working ports 3 e 4





- 1 : Single work port
- 2 : Two simultaneous work ports

Features

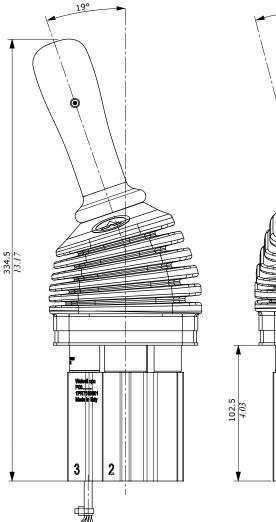
ELECTROMAGNET

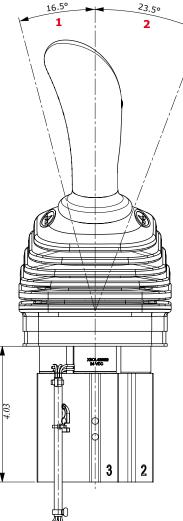
Nominal voltage tolerance. : $\pm 10\%$ Power rating : 8.2 W

Nominal current : 0.69 A - 12 VDC

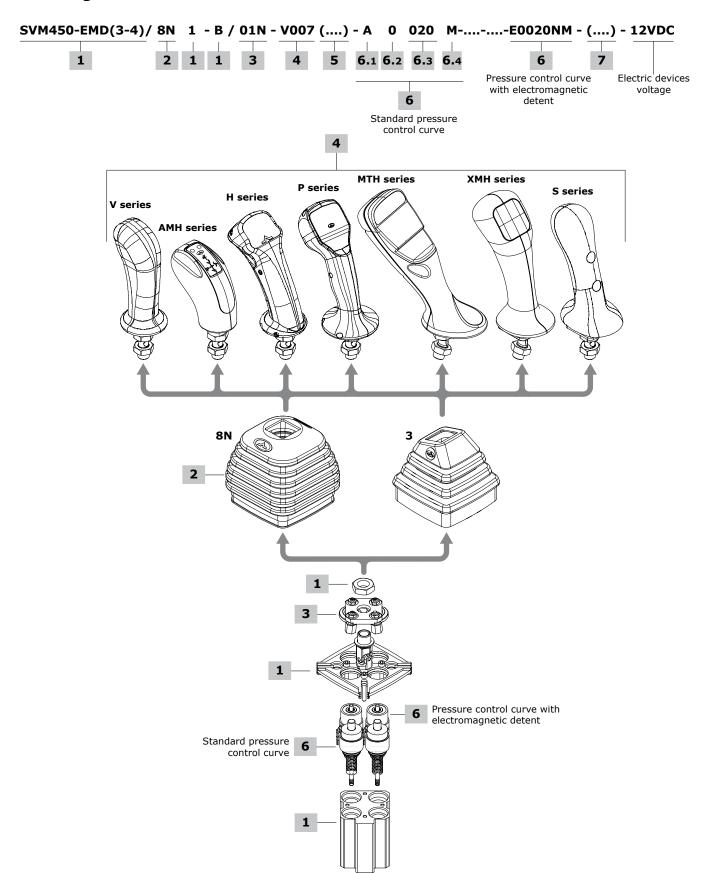
: 0.345 A - 24 VDC

Coil insulance : Class H Weather protection : IP65 Insertion : 100%





Ordering codes-



- Ordering codes

1 Body kit with flange *

TYPE: **SVM450-EMD(4)/B** CODE: 5CO3450303

DESCRIPTION: With detent arrangement on port 4

TYPE: **SVM450-EMD(3-4)/B** CODE: 5CO3450301

DESCRIPTION: With detent arrangement on ports 3 and 4

TYPE: **SVM450-EMD(2-3-4)/B**DESCRIPTION: With detent arrangement on ports 2, 3 and 4

2 Rubber bellow

TYPE CODE DESCRIPTION

8N 3SOF115115 Universal type, square base with logo 3SOF111111 Sloping type, square base with logo;

only for 19° sloping handles

3 Detent configuration

With spring return in neutral position

TYPE CODE DESCRIPTION

01N(1D)
 5CIN8011ND
 Control kit arranged for 1 detent
 01N(2D)
 5CIN8012ND
 Control kit arranged for 2 detent
 01N(3D)
 5CIN8013ND
 Control kit arranged for 3 detent
 NOTE: The text between () can be omitted from description of composition

4 Handles

Some handles as examples are listed below: for technical specifications and full range of handles and other types of joint see the "Handles and handlevers" catalogue.

V series handle

TYPE: **V007-(Q)** CODE:5IMP030071 DESCRIPTION Without switches, with sloping 19° left joint and square

seat bellow adapter **AMH series handle**

TYPE: AMHT030008-(Q)-6N2D035-7R2D035-8N2D035-(E1)

CODE: 2IM3000007

DESCRIPTION: 3 spring return push-buttons, flying leads, sloping 19°

right joint and square seat bellow adapter

H series handle

TYPE: HMB03G-(Q)-1R4040-4R3040-5R2040-(12VDC)

CODE: 2IM4600051

DESCRIPTION: 3 spring return push-buttons on the operator side,

flying leads, straight joint, for circular seat bellow

P series handle

TYPE: PZMA1200B7-0R035-3Y2D035-WN130035-ZN130035-

(SCHEDA 2PWM)-(TD2M) CODE: 2IM8700003

DESCRIZIONE: 2 proportional roller and 1 spring return push-button on operator side, "dead man" switch, flying leads with Deutsch pins, sloping 19° left joint and square seat bellow adapter

MTH series handle

TTYPE: MTH-R00-ZTI4100(K)Y-00-1Y2035-2Y2035-3N2035-6N2035-ZN122035-MRZ035-(5VDC)-D2F12

CODE: 2IM2000005

DESCRIPTION: 1 proportional roller and 4 spring return push-buttons on the operator side, 1 FNR rocker switch on the opposite side, Deutsch connector, sloping 9° left joint and square seat bellow adapter

XMH series handle

TYPE: XMHZTA21008-2G2035-4G2035-7G2035-VG171035

CODE: 2IM1000004

DESCRIPTION: 1 proportional roller and 2 spring return push-buttons on the opetrator side, 1 push button with spring return on the opposite side, Deutsch connector, 19° sloping right joint, for square seat bellow

S series handle

TYPE: **SZTA8-0G4045-XG122045** CODE: 2IM5310003 DESCRIPTION: With proportional roller on the operator side and spring return push-button on the opposite side, 19° sloping right joint, for square seat bellow

5 Handle position

TYPE DESCRIPTION

(-) Standard configuration, forward operation to work port 4: omitted in description

(90) Mounted with 90° rotation step: forward operation towards

(180) Mounted with 180° rotation step: forward operation towards port 2

(270) Mounted with 270° rotation step: forward operation towards port 3

6 Pressure control curves

For list available see from page 63

6.1 Curve type

TYPE	DESCRIPTION
Α	Without pre-feeling, without solenoid
В	With pre-feeling, without solenoid
С	With solenoid 24VDC and pre-feeling
D	With solenoid 24VDC, without pre-feeling
E	With solenoid 12VDC, with pre-feeling
F	With solenoid 12VDC, without pre-feeling
G	With solenoid 24VDC and pre-feeling after step

6.2 Typology of curves

TYPE DESCRIPTION

With step

Without step

6.3 Curve identification

Progressive number

6.4 Return springs

TYPE DESCRIPTION

M Operation range from 18 to 25.5 N - from 4.04 to 5.73 lbf
 A Operation range from 23 to 35.2 N - from 5.17 to 7.91 lbf

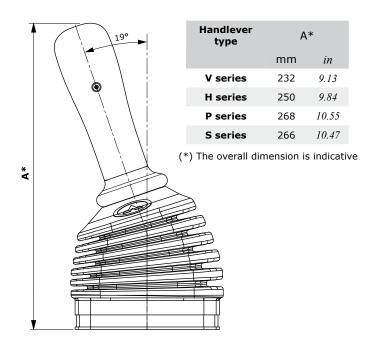
7 Connector

Configurations with detent or microswitch are provided with wires with tin-plate terminals. For connectors please contact our Sales Department.

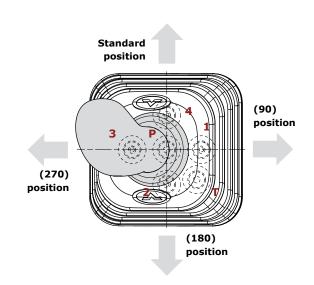
NOTE (*) - Codes are referred to BSP thread.

Configuration option

Handle option

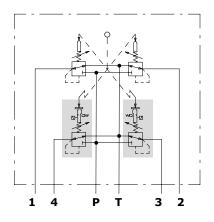


Handle positions

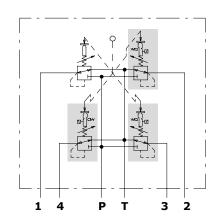


Detent configuration

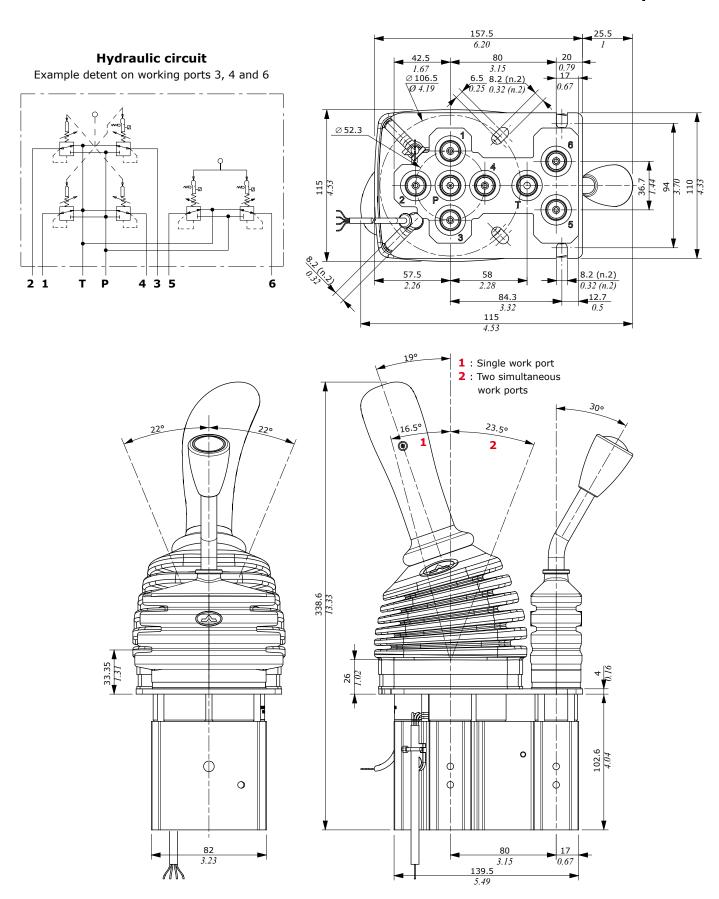
01/2D typeDetent on ports 3 and 4, with spring return



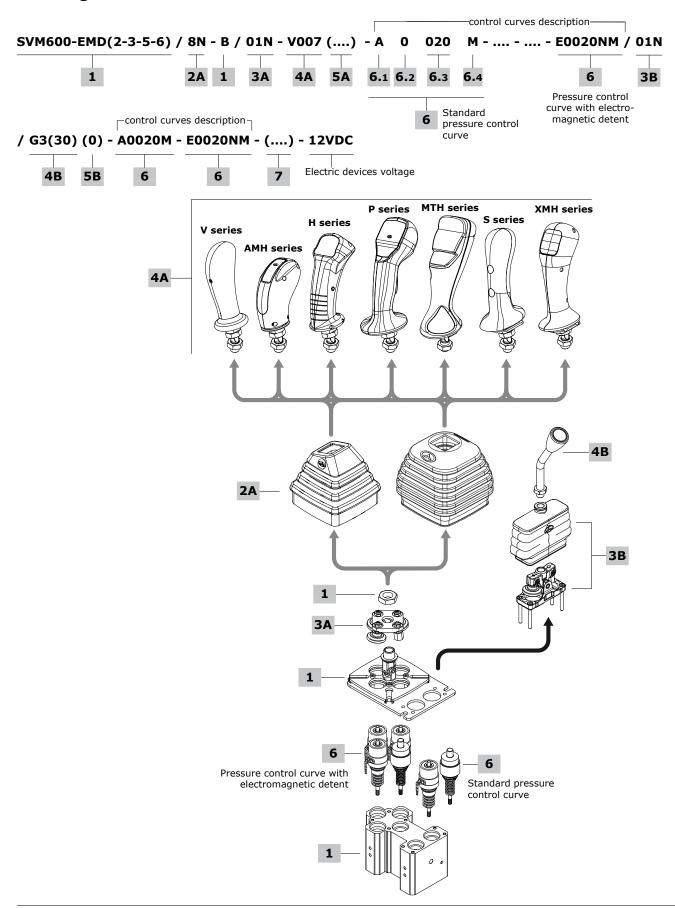
01/3D typeDetent on ports 2, 3 and 4 with spring return



Dimensions and circuit hydraulic



Ordering codes-



- Ordering codes

Main options

1 Body kit with flange *

TYPE: SVM600-EMD(2-3)/B

DESCRIPTION: With detent arrangement on ports 2 and 3

TYPE: SVM600-EMD(1-2-3)/B

DESCRIPTION: With detent arrangement on ports 1, 2 and 3

TYPE: SVM600-EMD(2-3-6)/B

DESCRIPTION: With detent arrangement on ports 2, 3 and 6

TYPE: SVM600-EMD(1-2-3-6)/B

CODE: 5CO3600303

DESCRIPTION: With detent arrangement on ports 1, 2, 3 and 6

6 Pressure control curves

For list available see from page 63

6.1 Curve type

TYPE DESCRIPTION

A Without pre-feeling, without solenoid
 B With pre-feeling, without solenoid
 C With solenoid 24VDC and pre-feeling
 D With solenoid 24VDC, without pre-feeling
 E With solenoid 12VDC, with pre-feeling
 F With solenoid 12VDC, without pre-feeling
 G With solenoid 24VDC and pre-feeling after step

6.2 Typology of curves

TYPE DESCRIPTION

With step

Without step

6.3 Curve identification

Progressive number

6.4 Return springs

TYPE DESCRIPTION

M Operation range from 18 to 25.5 N - from 4.04 to 5.73 lbf
 A Operation range from 23 to 35.2 N - from 5.17 to 7.91 lbf

7 Connector

Configurations with detent or microswitch are provided with wires with tin-plate terminals. For connectors please contact our Sales Department.

Joystick options

2A Rubber bellow

TYPE CODE DESCRIPTION

8N 3SOF115115 Universal type, square base with logo 3SOF111111 Sloping type, square base with logo;

only for 19° sloping handles

3A Detent configuration

With spring return in neutral position TYPE CODE DESCRIPTION

01N(2D) 5CIN8012ND Control kit arranged for 2 detents **01N(3D)** 5CIN8013ND Control kit arranged for 3 detents

NOTE: The text between () is omitted from description of composition

4A Handles

Some handles as examples are listed below: for technical specifications and full range of handles and other types of joint see the "Handles and handlevers" catalogue.

V series handle

TYPE: **V007-(Q)**CODE:5IMP030071
DESCRIPTION Without switches, with sloping 19° left joint and square seat bellow adapter

S series handle

TYPE: **SZTA8-0G4045-XG122045** CODE: 2IM5310003 DESCRIPTION: With proportional roller on the operator side and spring return push-button on the opposite side, 19° sloping right joint, for square seat bellow

5A Handle position

TYPE DESCRIPTION

 (-) Standard configuration, forward operation toward port 4: omitted in description

(180) Mounted with 180° rotation step: forward operation towards port 2

(270) Mounted with 270° rotation step: forward operation towards port 3

Single acting options

3B Control option

Complete with rubber bellow (code 3SOF190783-C) and fixing wrapper

TYPE CODE DESCRIPTION

01N(0D) 5CIN1010DN Spring return to neutral position, without

detent arrangement

01N(1D) 5CIN1011DN Spring return to neutral position, single

detent arrangement; right or left position is defined by pressure control curve position

01N(2D) 5CIN1012DN Spring return to neutral position, double

detent arrangement

NOTE: The text between () is omitted from description of composition

4B Standard handlever

TYPE CODE DESCRIPTION

G3(30) 5AST371228G Ogival with portlight, 30° bending rod

For features see page 42

5B Handle position

TYPE DESCRIPTION

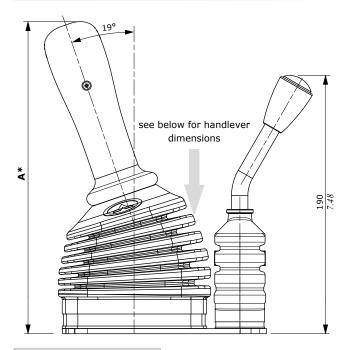
(0) Handlever oriented on P and T plugged ports

(90) Handlever oriented towards port 5(270) Handlever oriented towards port 6

For different positions, please contact our Sales Department.

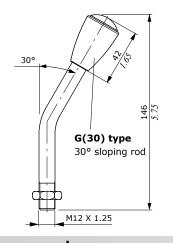
Configuration option-

Handle options

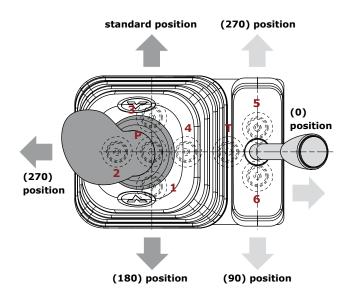


Handlever type	A*							
	mm	in						
V series	232	9.13						
H series	250	9.84						
P series	268	10.55						
S series	266	10.47						

(*) The overall dimension is indicative



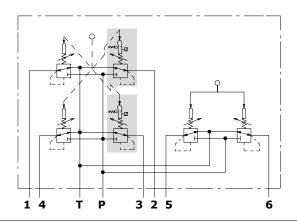
Handle and handlever positions



Detent configuration: examples

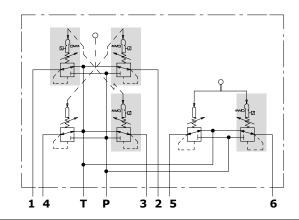
01/2D type (joystick)

Detent on ports 2 and 3, with spring return

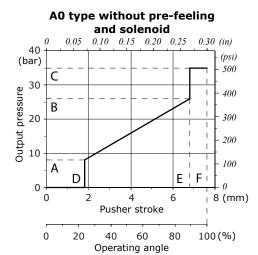


01/3D type (joystick) + 01/1D (single acting)

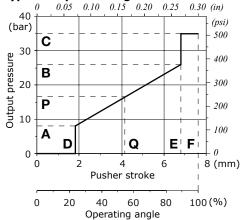
Detent on ports 1, 2, 3 and 6, with spring return



-Control curves with step



E0 type with pre-feeling and solenoid 12 VDC C0 type with pre-feeling and solenoid 24 VDC



Cu	rve				Pressure								Str	oke				
descr	description		4	ı	P	ı	В		С	C)	(5	E	E	ı	=	
Type	Nr	bar (±toll)	psi (±toll)	bar (±toll)	psi (±toll)	bar (±toll)	psi (±toll)	bar	psi	mm	(in)	mm	(in)	mm	(in)	mm	(in)	CODE (1)
A0	011	3.5 (±1)	$50.7~(\pm 14.5)$			25 (±1.5)	$362.5~(\pm 21.7)$	35	507.5	0.85	0.03			7.25	0.28	7.6	0.30	5CR7A0011M
AO	099	3.6 (±1)	52.2 (±14.5)			15.8 (±1)	$229.1~(\pm 14.5)$	35	507.5	0.85	0.03			7.25	0.28	7.6	0.30	5CR7A0099M
AO	B47	3.8 (±1)	55.1 (±14.5)			16.7 (±1)	242.15 (±14.5)	35	507.5	0.85	0.03			7.25	0.28	7.6	0.30	5CR7A0B47M
AO	086	4 (±1)	58 (±14.5)			16.5 (±1)	$239.2~(\pm 14.5)$	35	507.5	0.85	0.03			7.25	0.28	7.6	0.30	5CR7A0086M
A0	020	4.3 (±0.5)	62.3 (±7.25)			15.2 (±1.5)	220.4 (±21.7)	35	507.5	0.85	0.03			7.25	0.28	7.6	0.30	5CR7A0020M
A0	028	5 (±1)	72.5 (±14.5)			21 (±1.5)	$304.5~(\pm 21.7)$	35	507.5	0.85	0.03			7.25	0.28	7.6	0.30	5CR7A0028M
AO	075	5 (±0.5)	72.5 (±7.25)			15 (±1.5)	22.5 (±21.7)	35	507.5	0.85	0.03			7.25	0.28	7.6	0.30	5CR7A0075A
A0	077	5 (±1)	72.5 (±14.5)			27 (±2)	391.5 (±29)	35	507.5	0.85	0.03			7.25	0.28	7.6	0.30	5CR7A0077M
A0	119	5 (±1)	72.5 (±14.5)			23.5 (±2)	340.7 (±29)	35	507.5	0.85	0.03			7.25	0.28	7.6	0.30	5CR7A0119M
A0	001	5.8 (±0.5)	84.1 (±7.25)			22 (±1.5)	319 (±21.7)	30	435	0.85	0.03			7.25	0.28	7.6	0.30	5CR7A0001M
A0	033	5.8 (±0.5)	84.1 (±7.25)			19.1 (±1)	276.9 (±14.5)	35	507.5	0.85	0.03			7.25	0.28	7.6	0.30	5CR7A0033B
A0	085	6 (±1)	87 (±14.5)			25 (±1.5)	362.5 (±21.7)	35	507.5	0.85	0.03			7.25	0.28	7.6	0.30	5CR7A0085A
AO	088	8 (±0.5)	116 (±7.25)			27 (±1.5)	391.5 (±21.7)	35	507.5	0.85	0.03			7.25	0.28	7.6	0.30	5CR7A0088M
A0	036	12 (±0.5)	174 (±7.25)			25 (±1)	362.5 (±14.5)	35	507.5	0.85	0.03			7.25	0.28	7.6	0.30	5CR7A0036A
With F		ing for elect	romagnetic	detent														
CO	B09	3.5 (±0.5)	50.7(±7.25)	, ,	, ,	, ,	218.9 (±14.5)					6.5		7.25		7.6		5CR7C0B09NM
EO	B09	3.5 (±0.5)	50.7 (±7.25)	. ,		` ′	218.9 (±14.5)					6.5		7.25		7.6	0.30	5CR7E0B09NM
CO	011	3.5 (±1)	50.7 (±14.5)	25 (±1.5)	362.5 (±21.7)	27.9 (±1.5)	41.8 (±21.7)			0.85		6.5		7.25		7.6	0.30	5CR7C0011NM
CO	B47	3.8 (±1)	55.1 (±14.5)	15.3 (±0.5)	221.8 (±7.25)	16.8 (±1)	243.6 (±14.5)	35	507.5	0.85		6.5	0.25	7.25	0.28	7.6	0.30	5CR7C0347NM
EO	086	4 (±1)	58 (±14.5)	16.5 (±0.5)	239.2 (±7.25)	18.2 (±1)	263.9 (±14.5)			0.85		6.5			0.28	7.6	0.30	5CR7E0086NM
CO	118	4 (±0.5)	58 (±7.25)	13 (±1)	188.5 (±14.5)	16.1 (±1)	233.4 (±14.5)			0.85		6.5		7.25		7.6	0.30	5CR7C0118NM
CO	020	4.3 (±1)	62.3 (±14.5)	15.2 (±1)	220.4 (±14.5)	16.6 (±1)	240.7 (±14.5)			0.85				7.25		7.6	0.30	5CR7C0020NM
CO	028	5 (±1)	72.5 (±14.5)	20 (±1.5)	290 (±21.7)	22 (±2)	319 (±29)	35	507.5	0.85	0.03	6.5	0.25	7.25	0.28	7.6	0.30	5CR7C0028NM
CO	075	5 (±0.5)	72.5 (±7.25)	15 (±1)	$217.5~(\pm 14.5)$	16.3 (±1.5)	$236.3~(\pm 21.7)$	35	507.5	0.85	0.03	6.5	0.25	7.25	0.28	7.6	0.30	5CR7C0075NA 5CR7C0075NB
EO	075	5 (±0.5)	72.5 (±7.25)	15 (±1)	217.5 (±14.5)	16.3 (±1.5)	236.3 (±21.7)	35	507.5	0.85	0.03	6.5	0.25	7.25	0.28	7.6	0.30	5CR7E0075NB
CO	001	5.8 (±1)	84.1 (±14.5)	22 (±1.5)	319 (±21.7)	24.2 (±2)	350.9 (±29)	35	507.5	0.85	0.03	6.5	0.25	7.25	0.28	7.6	0.30	5CR7C0001NM
EO	033	5.8 (±0.5)	84.1 (±7.25)	19 (±1)	275.5 (±14.5)	20.8 (±1)	301.6 (±14.5)	35	507.5	0.85	0.03	6.5	0.25	7.25	0.28	7.6	0.30	5CR7E0033NB
		` ,		. ,		, ,												5CR7E0033NM
CO EO	070 085	5.8 (±1)	84.1 (±14.5)	, ,		, ,	356.7 (±21.7)					6.5		7.25		7.6	0.30	5CR7C0070NM
CO	088	6 (±1)	87 (±14.5)	25 (±2)	362.5 (±29)	` ′	398.75 (±29)					6.5		7.25	0.28	7.6 7.6	0.30	5CR7E0085NM 5CR7C0088NM
CO		8 (±0.5)	116 (±7.25)	27 (±1)	391.5 (±14.5)		427.75 (±14.5)											
CU	036	12 (±1)	174 (±14.5)	25 (±1.5)	302.3 (±21./)	20./ (±1.5)	387.15 (±21.7)	35	307.3	0.85	0.03	0.5	0.23	7.25	0.28	7.6	0.30	5CR7C0036NA

 $^{\tiny (i)}$ Codes are referred to the curve with the specific return spring For different curves, please contact our Sales Department