

Joysticks



Adaptability
Modularity
Safety
Reliability

New contact
blocks

④



⑤



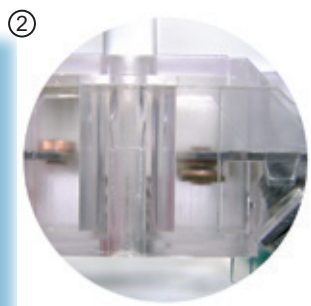
⑥



①



②



③



The range of possibilities :

- ① **Multiple functions**
 - 1 to 4 directions.
 - 1 or 2 speeds per direction.
 - 1 to 2 tiers (1 to 4 contacts) per direction
1NO, 1NC, 1NC1NO, 2NC, 2NO.
 - Contact identification per standards, colour code
(green for NO, red for NC)
 - Stable or auto-return positions.
- ② **Flexibility and accuracy in the contact solutions**
 - Self cleaning, reinforced contacts.
 - Choice of the contact material depending on the utilisation:
low current, harsh atmosphere ...
 - Possibility of modifying the contact sequence using different
contact thickness: standard, half-thickness, thick.
 - Addition of a specific module (early breaking, tactile sensation)
- ③ **Choice of connections**
 - Screws and brackets or washers, IP2 projection.
 - Single or double tabs for 6,35 mm lugs.
 - Straight, 90°, 45°.
(Contact us for other connection types)
- ④ **Choice of dimensions**
 - Numerous options for levers and grips
provide for varying the dimension of the manoeuvring
device according to the space available or to the
desired ergonomics.
- ⑤ **A robust device**
 - High mechanical resistance.- IP66 protection
 - Sealing IP66
 - Very low temperature versions.

The modular design of MAFELEC's control and signalling components provides for a multitude of combinations and adaptations.

The examples illustrated in this catalogue only represent a fraction of designs produced by our Design Office every day for our customers.

All alternative solutions can be designed from the basic elements, to produce the desired function.



Our equipment complies with the European RoHS directive, restricting the use of certain dangerous substances in electrical equipment.

Compliance with Standards

Certification	IEC NF EN 60947-5-1, IEC NF EN 60077-2
Vibration resistance and shock	IEC NF EN 61373, IEC NF EN 60068-2-6
Storage temperature	- 40°C to + 85°C per IEC NF EN 60068-2-1, IEC NF EN 60068-2-2
Operating temperature	- 25°C to + 70°C per IEC NF EN 60068-2-1, IEC NF EN 60068-2-2
Protection against accidental contact with active circuits	IP2x per IEC NF EN 60529 with protector
Fire resistance	EN 45545
Degree of protection	IP66 per IEC NF EN 60529
Mechanical service life in millions of switching operations	Automatic return : 1 Stable position : 0.3

Characteristics of the contact elements

Rated thermal current	I _{th} = 20A per IEC NF EN 60947-5-1
Rated insulation voltage	U _i = 630V per IEC NF EN 60947-5-1 and IEC NF EN 60077-2
Rated surge voltage	6 kV per IEC NF EN 60947-5-1 and IEC NF EN 60077-2
Contact operation type	Slow make depending action
Activation force	Push button : 1NC = 8N, 1NO = 10N, 2NC = 13N, 2NO = 13N
Contact material	Depending on the type of environment: Oxidising atmosphere, corrosive sulfurised type (SO₂, H₂S) eg Places of high diesel and exhaust concentration or certain industries processing waste incinerators.

Any other atmosphere including saline atmospheres.

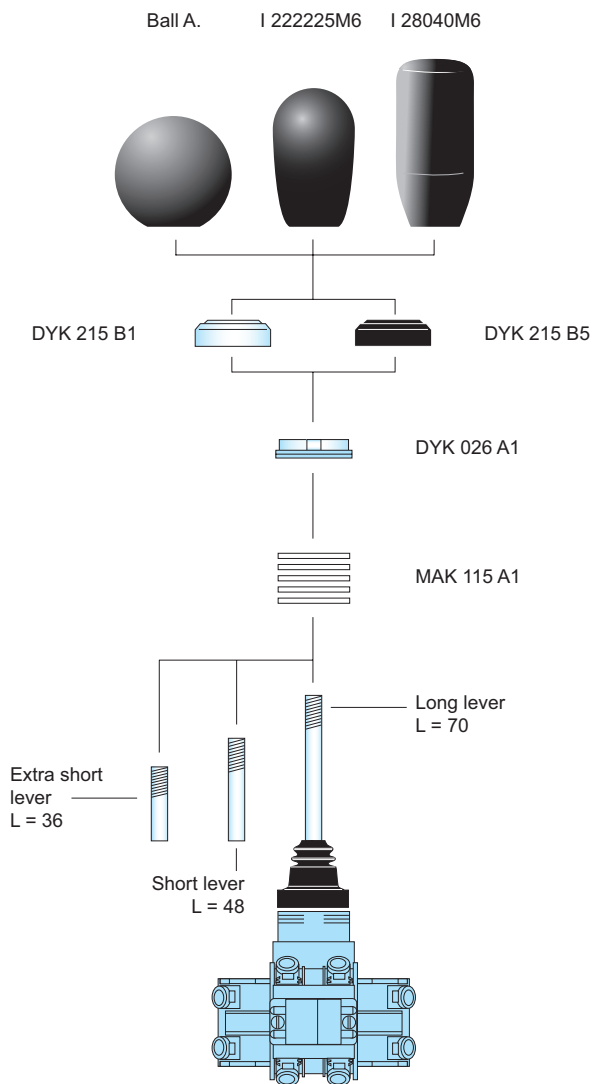
Atmospheres	Highly sulfurised (SO ₂ , H ₂ S)	Other
Current level*		
≥ 10 mAmps	AgPd	AgNi
1mAmp < I < 10 mAmps	AgNi + gilding	AgNi + gilding

* For all levels of current < 15mAmps, please contact us to specify the conditions of use (outdoor pollution, signal type, EMC, ...).

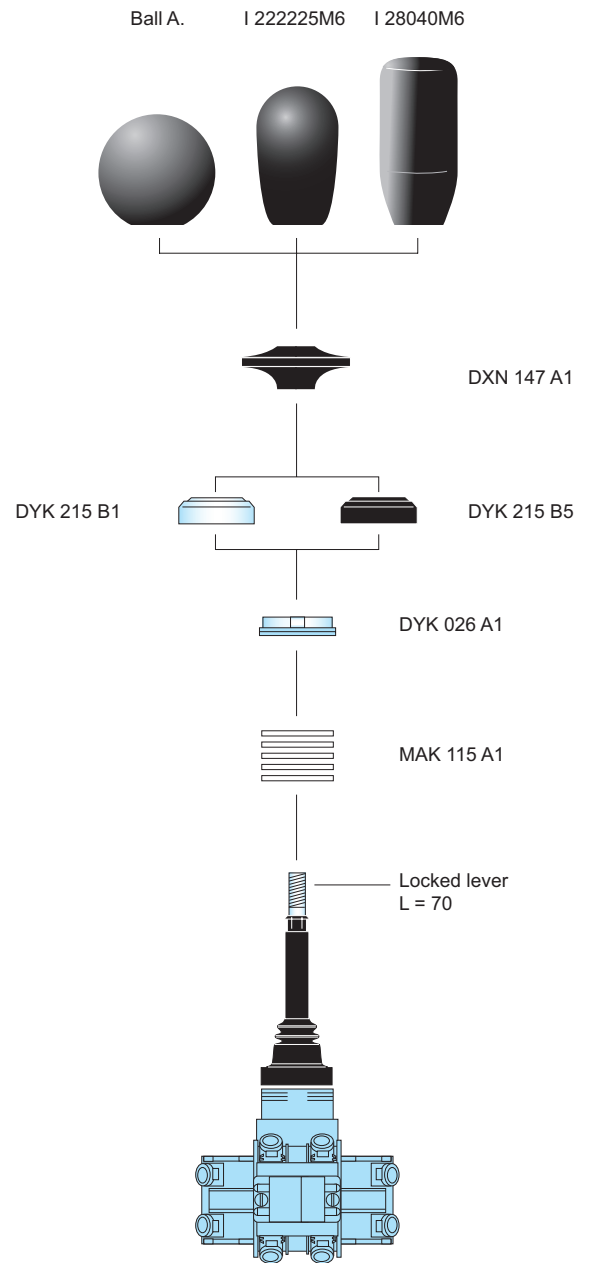
Maximum number of contacts	4 (2 stacks) by side
Terminal markings	Per IEC NF EN 60947-5-1
Operating power	AC-12 : 230V/15A & 400V/8A AC-15 : 230/8A & 400V/8A DC-12 : 24V/15A & 110V/8A DC-13 : 24V/4A & 110V/1A
Connection	Screw and bracket : min. 1x 0.22 mm ² , max. 2x2.5 mm ² Single or double tab for 6.35 mm clip. Special connection on request

22 Joysticks - Presentation

- Joystick Ø 22



- Joystick Ø 22 with central position locks



NOTA : The rings to lock (ref YSK 8073 ou DXN 147 A1) of joystick aire delivered disassembled for the mounting, and must be correctly fixed after the assemblage of this one.

22 Joysticks - P/N codification

	A	B1	B2	B3	B4	C1	C2	C3	C4	D
		12 H	3 H	6 H	9 H	12 H	3 H	6 H	9H	
L22M										
Joystick range	Ball grip See table 1	Mechanical part See table 2				Electrical part See table 3				Connection type See table 4

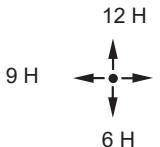
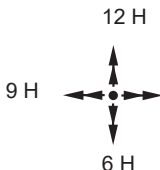
1 - Ball grip

Complete the box in column **A** indicating the lever code.

Length 54 mm with ball Ø 15 x 25 mm (**) extra short, brilliant bezel extra short, black bezel extra short, very low temperature, brilliant bezel extra short, very low temperature, black bezel		Code C CN Y YN
Length 66 mm with ball Ø 15 x 25 mm (*) short, brilliant short, black short, brilliant, very low temperature short, black, very low temperature		Code M N X S
Length 88 mm with ball Ø 15 x 25 mm (*) long, brilliant long, black long, brilliant, very low temperature long, inox, very low temperature long, black, very low temperature		Code L P W AA R
Length 93 mm with ball Ø 15 x 25 mm (*) locked, brilliant locked, watertight brilliant		Code V O
Length 54 mm with handle Ø 18 x 40 mm (**) extra short, brilliant bezel extra short, black bezel extra short, very low temperature, brilliant bezel extra short, very low temperature, black bezel		Code D DN I IN
Length 66mm with handle Ø 18 x 40 mm (*) short, brilliant short, black short, brilliant, very low temperature short, black, very low temperature		Code B F H K
Length 88 mm with handle Ø 18 x 40 mm (*) long, brilliant long, black long, brilliant, very low temperature long, black, very low temperature		Code A J G U
Length 108 mm with handle Ø 18 x 40 mm (*) lock, brilliant lock, watertight brilliant		Code E Q

2 - Mechanical part

Complete the box in columns **B1 B2 B3 B4** indicating the code of the mechanical part for each direction.

	
1 position per direction automatic return : RA stable position : PM	Code 1 2
	
2 positions per direction automatic return + automatic return : RA + RA stable position + stable position : PM + PM stable position + automatic return : PM + RA position prohibited	Code 3 4 5 0

3 - Electrical part

Complete the box in columns **C1 C2 C3** indicating the code of electrical contacts.

In the case of a direction with 2 positions, "2F" (2F in the first position and 2 other contact 2F in the second position) means :
1 position per direction = 4 contacts max. per direction
2 positions per direction = 2 contacts max. per position

Contact	Code	Contact	Code	Contact	Code
1O	A	1O 2F	F	3O 1F	K
1F	B	2O 1F	G	2O 2F	L
1O 1F	C	3O	H	4O	M
2O	D	3F	I	4F	N
2F	E	1O 3F	J	sans	R
1F + 1F	P	1F + 1F + OA	Q		

4 - Connection

Complete the box in column **D**

Screw and bracket with IP2X Screw and bracket without IP2X Double tabs for clips of 6.35 mm	Code without V F2
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(*)Standard :

For short or long lever : brilliant lever = brilliant bezel; black lever = black bezel; Other, contact us or use definition chart page 54.

(**) For ultra short lever, The lever is already brilliant (it is hidden under the bellows), the bezel give the color.

Standard Joysticks



22 Joysticks - Complete units - Ø 22 Range

- Chrome metal bezel - Central attachment by nut
- 1 or 2 contacts per tier - Connection by IP2x screw / bracket

Description	Contact	Direction	Part Number	Weight Kg
1-direction joysticks				
Lever + ball grip L = 88 mm :				
1 stable position	1NO / pos.		L22ML2000BRRRV2	0.195
	1NO + 1NC / pos.		L22ML2000CRRRV2	0.200
	2NO / pos.		L22ML2000ERRRV2	0.200
1 position with automatic return to the centre	1NO / pos.		L22ML1000BRRRV2	0.195
	1NO + 1NC / pos.		L22ML1000CRRRV2	0.200
	2NO / pos.		L22ML1000ERRRV2	0.200
2-direction joysticks				
Lever + ball grip L = 88 mm :				
1 stable position per direction	1NO / pos.		L22ML2020BRBRV2	0.220
	1NO + 1NC / pos.		L22ML2020CRCRV2	0.235
	2NO / pos.		L22ML2020ERERV2	0.235
1 position with automatic return to the centre per direction	1NO / pos.		L22ML1010BRBRV2	0.220
	1NO + 1NC / pos.		L22ML1010CRCRV2	0.235
	2NO / pos.		L22ML1010ERERV2	0.235
Lever + ball grip L = 66 mm :				
1 stable position per direction	1NO / pos.		L22MM2020BRBRV2	0.220
	1NO + 1NC / pos.		L22MM2020CRCRV2	0.235
	2NO / pos.		L22MM2020ERERV2	0.235
1 position with automatic return to the centre per direction	1NO / pos.		L22MM1010BRBRV2	0.220
	1NO + 1NC / pos.		L22MM1010CRCRV2	0.235
	2NO / pos.		L22MM1010ERERV2	0.235
3-direction joysticks				
Lever + ball grip L = 88 mm :				
1 stable position and 2 x 1 position with automatic return to the centre	1NO / pos.		L22ML1012BRBBV2	0.240
	1NO + 1NC / pos.		L22ML1012CRCCV2	0.255
	2NO / pos.		L22ML1012EREEV2	0.255
4-direction joysticks				
Lever + ball grip L = 88 mm :				
1 stable position per direction	1NO / pos.		L22ML2222BBBBV2	0.265
	1NO + 1NC / pos.		L22ML2222CCCCV2	0.280
	2NO / pos.		L22ML2222EEEEV2	0.280
1 position with automatic return to the centre per direction	1NC / pos.		L22ML1111BBBBV2	0.265
	1NO + 1NC / pos.		L22ML1111CCCCV2	0.280
	2NC / pos.		L22ML1111EEEEV2	0.280
Lever + ball grip L = 66 mm :				
1 stable position per direction	1NC / pos.		L22MM2222BBBBV2	0.265
	1NO + 1NC / pos.		L22MM2222CCCCV2	0.280
	2NC / pos.		L22MM2222EEEEV2	0.280
1 position with automatic return to the centre per direction	1NC / pos.		L22MM1111BBBBV2	0.265
	1NO + 1NC / pos.		L22MM1111CCCCV2	0.280
	2NC / pos.		L22MM1111EEEEV2	0.280

Connection by tab 6.35mm
add F2 at the end of the P/N
Example: L22MM1010ERER F2



Locking joysticks



22 Joysticks - Complete units - Ø 22 Range

- The central position of joystick locks automatically (prevents involuntary) - Chrome metal bezel - Central attachment by nut
- 1 or 2 contacts per tier - Connection by IP2x screw / bracket

Description	Contact	Direction	Part Number	Weight Kg
2-direction joysticks				
Lever + ball grip L = 88 mm :				
1 position with automatic return to the centre per direction	1NO / pos.		L22MV1010BRBRV2	0.220
	1NO + 1NC / pos.		L22MV1010CRCSV2	0.235
	2NO / pos.		L22MV1010ERERV2	0.235
1 stable position per direction	1NO / pos.		L22MV2020BRBRV2	0.195
	1NO + 1NC / pos.		L22MV2020CRCSV2	0.200
	2NO / pos.		L22MV2020ERERV2	0.200
2 positions with automatic return to the centre per direction	1NO / pos.		L22MV3030BRBRV2	0.330
	1NO + 1NC / pos.		L22MV3030CRCSV2	0.345
	2NO / pos.		L22MV3030ERERV2	0.345



4-direction joysticks

Lever + ball grip L = 88 mm :

1 position with automatic return to the centre per direction	1NO / pos.		L22MV1111BBBBV2	0.265
	1NO + 1NC / pos.		L22MV1111CCCCV2	0.280
	2NO / pos.		L22MV1111EEEEV2	0.280
1 stable position per direction	1NO / pos.		L22MV2222BBBBV2	0.265
	1NO + 1NC / pos.		L22MV2222CCCCV2	0.280
	2NO / pos.		L22MV2222EEEEV2	0.280
2 positions with automatic return to the centre per direction	1NO / pos.		L22MV3333BBBBV2	0.380
	1NO + 1NC / pos.		L22MV3333CCCCV2	0.410
	2NO / pos.		L22MV3333EEEEV2	0.410

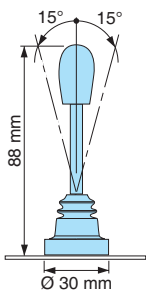


Connection by tabs 6.35mm
add F2 at the end of the P/N
Example: L22MV2222EEEE **F2**

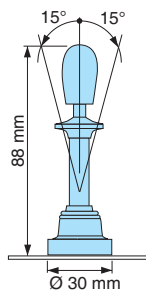
Dimensions - Cutouts

Support thickness : 1 to 6 mm

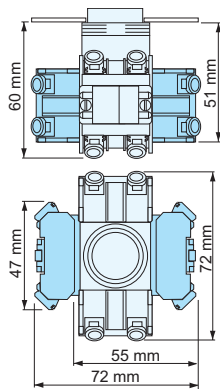
Standard lever



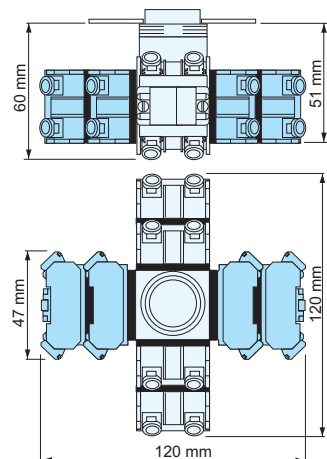
Locking lever



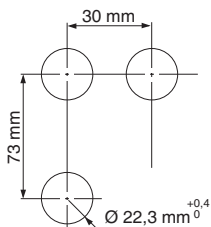
1,2,3 or 4 directions
1 position per direction



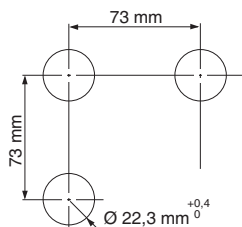
2 or 4 directions
2 positions per direction



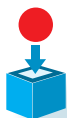
Drilling templates for
2-direction joysticks;
1 position per direction



Drilling templates for
4-direction joysticks;
1 position per direction

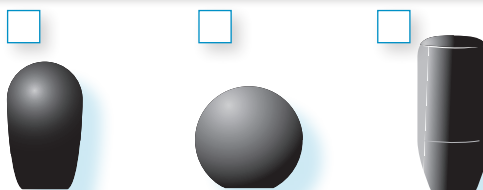


*** WARNING !**
For joysticks with 2 positions per direction,
the 73 mm dimension becomes 122 mm.



Definition chart

1- Check the ball grip



2- Check the type of lever

☐ Long
(70 mm)☐ Short
(48 mm)☐ Ultra-short (36 mm)
Only chrome-plated☐ Chrome-
plated☐ Black

Locking (long stalk)

☐ Standard☐ Watertight

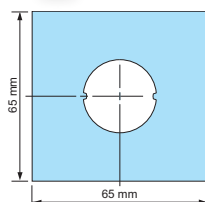
3- Check the bezel colour

☐ Chrome☐ Black

4- Check the type of bellows

☐ Standard☐ Special for very low
temperature

5- Check the label, if required

☐ POK825A0☐ POK826A8

6- Specify the label engraving if required

Position	Engraving
12h	
3h	
6h	
9h	

7- Check the label colour

☐ Black background
White engraving☐ Grey background
Black engraving☐ Red background
White engraving☐ Yellow background
Black engraving☐ Green background
White engraving☐ White background
Black engraving

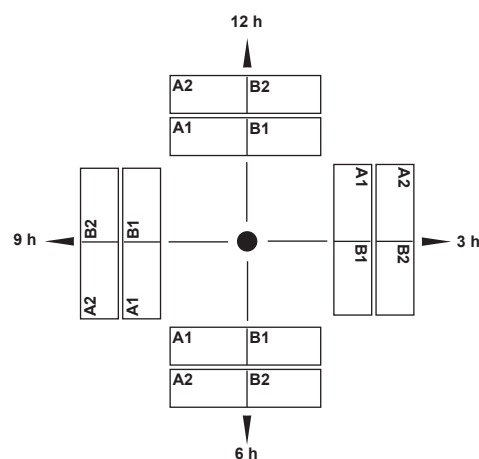
8- Complete the mechanical and electrical diagram



1 position per direction = max. 4 contacts
2 positions per direction = max. 2 contacts per direction

Box A. (mechanical part)
1 position use A1
2 positions use A1 and A2
Mark the box
PM: for stable position
RA: for automatic return to
the centre

Box B. (electrical part)
1 position use B1
2 positions use B1 et B2
Mark the type of contact in the box
(1NO - 1NC - 1NO1NC - 2NO - 2NC)



9- Check the type of contact

☐ Silver - Palladium☐ Silver - Nickel☐ Gold flash

10- Check the connection type

☐ Screw and bracket
IP2x☐ Screw and bracket☐ Double tabs for
6.35 mm clip