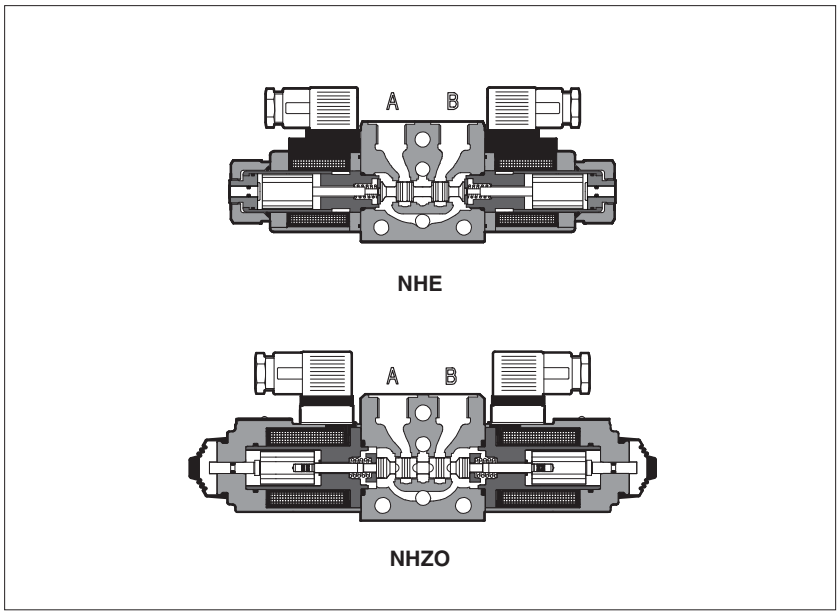
Bankable directional valves type NHE and NHZO

On-off and proportional, size 06



Descriptions
NHE (on-off) and NHZO (proportional) are size 06 directional solenoid valves specially designed for modular assembling to obtain compact blocks, up to 8 elements, whitout any additional subplate or manifold.

The P and T passing-trough lines and the A and B user ports with threaded connections are directly integrated in the valve body element.

Following optional executions are available : vertical (/MV) or horizontal (/MO) hand lever, mounting interface for installation of size 06 modular valves (/H), switching time device (/L*)

The valve block is closed at the ends with covers which include the P and T threaded connections.
Several cover's configurations are available with optional functions, see section 3

Characteristics
Max flow = 40 l/min
Max pressure = 250 bar

Applications
Mobile, agricultural, sky lift, ecc.

1 MODEL CODE OF BANKABLE ON-OFF DIRECTIONAL VALVES

NHE - 0 61 1 / MV - X 24 DC ** / *

Bankable on-off valves

Valve configuration, see section 8
61, 63, 67, 71, 75

Spool type: **1, 1/2, 3** see section 8

Options
A = solenoid mounted at side of port B (only for single solenoid valve)
H = interface for installation of modular valves type HMP, HQ, HR (see KT catalogue section D)
L1, **L2** = device for switching time control, see section 11.1
MV = vertical hand lever (not available with option /H) (see note 1 and 2)
MO = horizontal hand lever (see note 1 and 2)
WP = prolonged manual override protected by rubber cup

Only for double solenoid valves
BMV = vertical hand lever installed at side of port B (not available with option /H)
BMO = horizontal hand lever installed at side of port B

X = without connector, see section 5 for available connectors

Coils with special connectors see section 13
XJ = AMP Junior Timer connector (IP 67)
XK = Deutsch connector (IP 67)
XS = Lead Wire connection

Voltage code
12DC
24DC

Series number

Syntethic fluids:
PE = phosphate ester

(1): For single solenoid valves the hand lever is standard installed at the side of port A (side B for option /A). For double solenoid valves it is standard installed at side of port A.
(2): Hand lever not available for configuration 75.

2 MODEL CODE OF BANKABLE PROPORTIONAL DIRECTIONAL VALVE

NHZO - A - 05 1 - S3 / MV - ** 18 ** / *

Bankable proportional directional valves

A = without position transducer

Valves configurations, see section 9
05 = single solenoid
07 = double solenoid

Spool overlapping in central position, see section 9
1 = P, A, B, T positive overlapping
3 = P positive overlapping, A, B, T negative

Spool size
S1 = progressive spool, 10 l/1" Δp 30 bar total
S3 = progressive spool, 20 l/1" Δp 30 bar total
S5 = progressive spool, 40 l/1" Δp 30 bar total

Options
A = solenoid mounted at side of port B (only for single solenoid valve)
H = interface for installation of modular valves type HMP, HQ, HR (see KT catalogue section D)
MV = vertical hand lever (not available with option /H) (see note 1)
MO = horizontal hand lever (see note 1)
WP = prolonged manual override protected by rubber cup

Only for double solenoid valves (see note 1)
BMV = vertical hand lever installed at side of port B (not available with option /H)
BMO = horizontal hand lever installed at side of port B

Omit for connector SP-666 supplied with the valve
Coils with special connectors see section 14
XK = Deutsch connector (IP 67)
X9 = AMP connector (IP 69K)

Voltage code
Omit for standard coil (12 Vdc) to be used with Atos driver and power supply 24Vdc
6 = with coil 6 Vdc to be used with Atos driver and power supply 12Vdc
18 = with coil 18 Vdc to be selected in case different drivers than Atos are used

Series number

Syntethic fluids:
PE = phosphate ester

(1): For single solenoid valves the hand lever is standard installed at the side of port A (side B for option /A). For double solenoid valves it is standard installed at side of port A.

3 MODEL CODE OF COVER ELEMENTS

NB - M5/J / 100 / NC - ** 24 DC ** / *

Base module

Cover elements
00 = blind cover

Inlet cover with P and T connections
M5 = pressure relief cartridge
M5/J = pressure relief cartridge with venting
M5/QZ = pressure relief cartridge with proportional 3 way compensated flow control

Pressure range (only for M5, M5/J, M5/QZ)
100 = 7 ÷ 100 bar
250 = 15 ÷ 250 bar

Venting configuration (only for NB-M5/J)
NC = venting with energized cartridge
NO = venting with deenergized cartridge

Series number

Voltage code (only for NB-M5/J)
12 DC
24 DC
Voltage code (only for NB-M5/QZ)
Omit for standard coil (12 Vdc)
6 = with coil 6 Vdc
18 = with coil 18 Vdc

M5/J
X = without connector, see section 5 for available connectors
Coils with special connectors see section 13
XJ = AMP Junior Timer connector (IP 67)
XK = Deutsch connector (IP 67)
XS = Lead Wire connection

M5/QZ
Omit for connector SP-666 supplied with the valve
Coils with special connectors see section 14
XK = Deutsch connector (IP 67)
X9 = AMP connector (IP 69K)

Syntethic fluids:
PE = phosphate ester

4 MODEL CODE OF ACCESSORIES

6-NHE-101015 = intermediate plate for assembling of modular valves type HMP, HQ, HR (see KT catalogue section D) (1)
6-NHE-100016 = top plate with A and B connections G 3/8" for modular valves type HMP, HQ, HR (see KT catalogue section D) (1)
6-NB-100025 = mounting brackets
(1): add "/PE" at the end of the code for phosphate ester fluid, example 6 -NHE-101015**/PE**

5 ELECTRIC CONNECTORS

SP-666 = standard connector IP-65, suitable for direct connection to electric supply source
SP-667 = as SP-666 but with built in segnal led

EXAMPLE OF MODEL CODE OF ASSEMBLED GROUP

060703 NHE GROUP-4/1Z including:

1	NB-M5/J/100/NC-X 24DC	see section 3
1	NHE-0711/MV-X 24DC	see section 1
1	NHE-0713/MV-X 24DC	see section 1
1	6 -NHE-101015	see section 16
1	HQ-012	see KT catalogue table D160
1	6 -NHE-100016	see section 16
1	NHE-0631/2/AMV-X 24DC	see section 1
1	NHZO-A-073-S5 18	see section 2
1	NB-00	see section 15
2	6 -NB-100025	see section 15

See section 1, 2, 4, 15 and 16 for the complete identification of the single elements

6 MODEL CODE OF ASSEMBLED GROUP

060* NHE GROUP - 5 / 2Z**

Special code for each specific group composition

Assembled group

Total number of bankable elements

Number of proportional elements

Note: the code has to be composed by listing the bankable elements, from left to right side, starting form the cover with P and T connections.

7 MAIN CHARACTERISTICS OF NHE AND NHZO VALVES

Assembly position / location	Any position
Subplate surface finishing	Roughness index $\sqrt{}^{0,4}$ flatness ratio 0,01/100 (ISO 1101)
Ambient temperature	from -20°C to +70°C
Fluid	Hydraulic oil as per DIN 51524 .... 535; for other fluids see section 1
Recommended viscosity	15 ÷ 100 mm²/s at 40°C (ISO VG 15 ÷ 100)
Fluid contamination class	ISO 19/16, achieved with in line filters at 25 μm value to $\beta_{25} \geq 75$ (recommended)
Fluid temperature	-20°C +60°C (standard and /WG seals) -20°C +80°C (/PE seals)
Flow direction	As shown in the symbols of sections 8 and 9
Operating pressure	Ports P,A,B: **250** bar; Port T: **210** bar
Maximum flow	**40 l/min**, see operating limits at section 11 and 12
N° of bankable elements	1÷8
Ports dimensions	P, T, A, B G 3/8"

n° of assembled elements	**Screw size**		**n. of assembled elements**	**Screw size**	
1	M8x85	Screw type	5	M8x284	Tie rods
2	M8x130		6	M8x331	
3	M8x190	Tie rods	7	M8x378	
4	M8x237		8	M8x425	

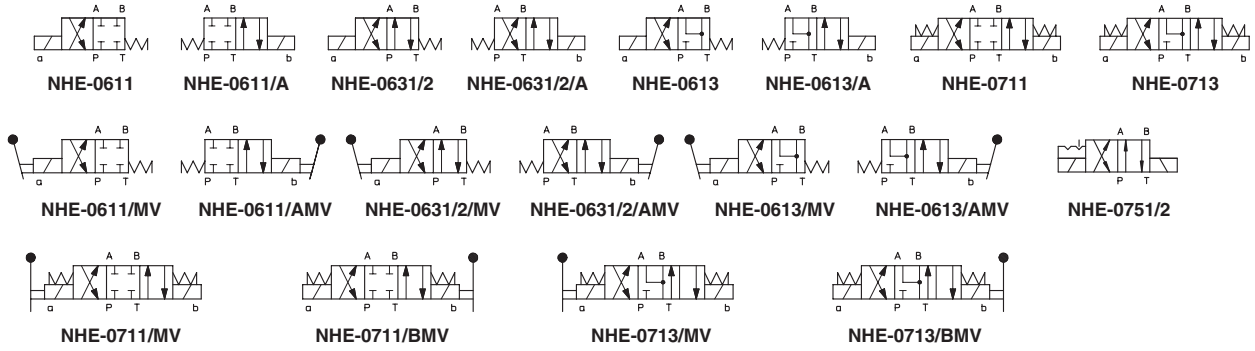
7.1 Corrosion protection characteristic

Valve body	Zinc coating with black passivation	Conforming to RoHs Directive 2002/95/CE
Solenoid housing	Zinc coating with gray passivation	General standard UNI ISO 1461 - salt fog resistance >120 hours
Aluminium parts	Black opaque anodizing	
Valve screws	GEOMET 500 ML treatment, salt fog resistance >500 hours	

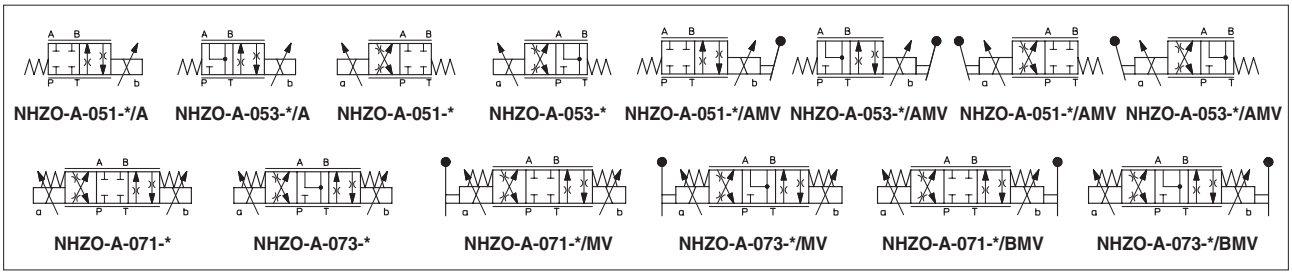
7.2 Coils characteristics

Insulation class		H (180°C) Due to the occuring surface temperatures of the solenoid coils, the European standards EN563 and EN982 must be taken into account
Connector protection degree		IP 65, IP 67 for option XJ and XK, IP 69 for option X9
Relative duty factor		100%
Supply voltage	NHE	12Vdc or 24Vdc
Coil resistance (20°C)	NHZO	3÷3,3 Ω (standard 12Vdc coil), 2÷2,2 Ω (6Vdc coil), and 13÷13,4 Ω (18Vdc coil)
Max solenoid current		2,2A (standard 12Vdc coil), 2,75A (6Vdc coil), 1A (18Vdc coil)
Supply voltage tolerance	NHE	± 10%

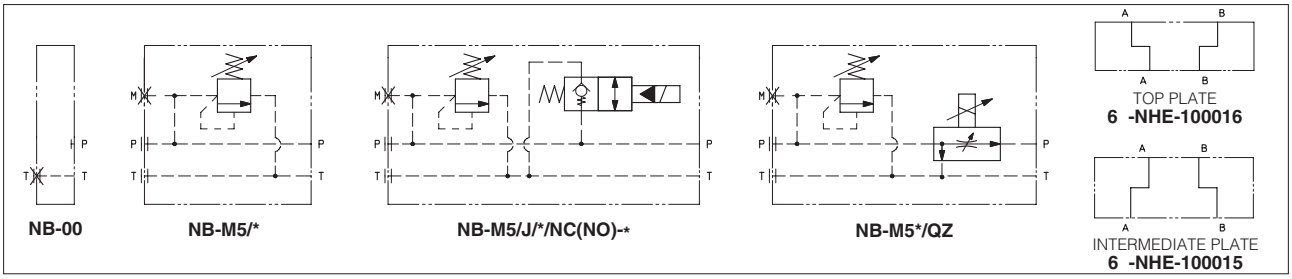
8 CONFIGURATIONS OF NHE ON-OFF DIRECTIONAL VALVES



9 CONFIGURATIONS OF NHZO PROPORTIONAL VALVES

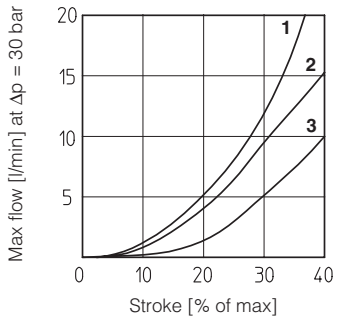


10 CONFIGURATIONS OF COVER ELEMENTS AND OF PLATES FOR MODULAR VALVES



11 TECHNICAL CHARACTERISTICS OF NHE VALVES based on mineral oil ISO VG 46 at 50°

Regulation diagram

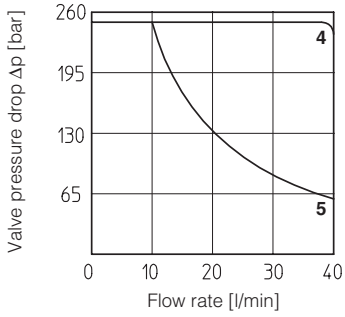


1 = spool 1/2 (A→T)
(P→A)

2 = spool 1/2 (P→B)
(B→T)
spool 1 (A→T)
(B→T)
spool 3 (A→T)
(B→T)

3 = spools 1 and 3 (P→A)
(P→B)

Operating limits



4 = spool 1
spool 3

5 = spool 1/2

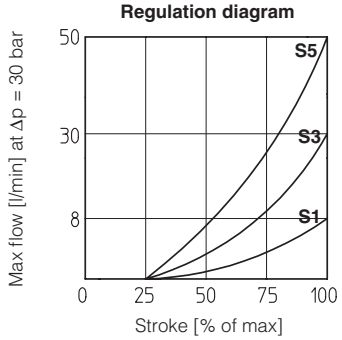
11.1 SWITCHING TIME CONTROL

averenge values (msec)
measured at 25 l/min, 150 bar

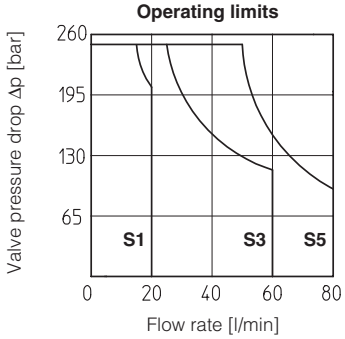
Switch	Standard	option **L1**	option **L2**
ON	60	90	110
OFF	35	60	75

12 TECHNICAL CHARACTERISTICS OF NHZO VALVES based on mineral oil ISO VG 46 at 50°

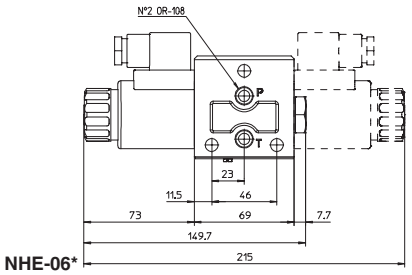
Regulation diagram



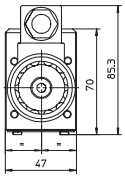
Operating limits

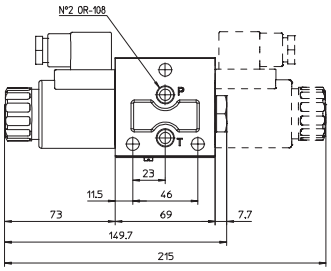


13 DIMENSIONS OF NHE ON-OFF DIRECTIONAL VALVES

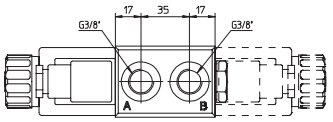


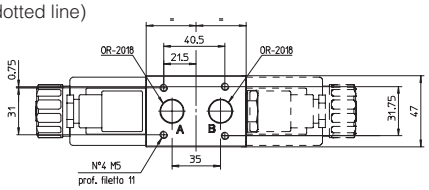
NHE-06*
NHE-07* (dotted line)

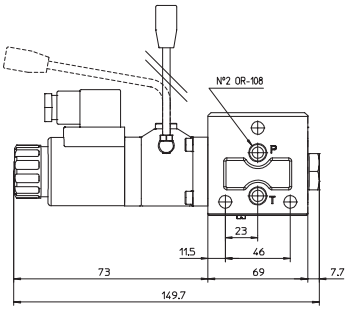


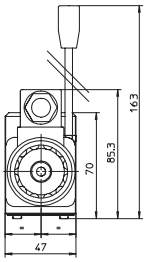


NHE-06*/H
NHE-07*/H (dotted line)



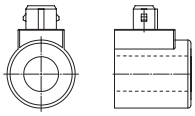






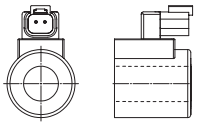
NHE-06*/MV
NHE-07*/MO (dotted line)

AMP Junior Timer connector



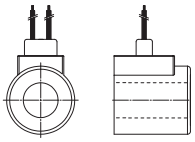
Option -XJ
Coil type **COEJ**
Protection degree IP67

Deutsch connector DT-04-2P



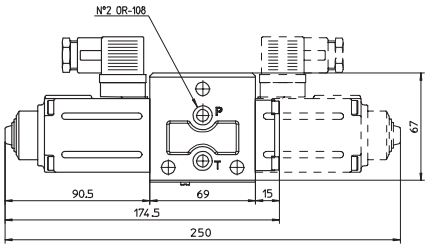
Option -XK
Coil type **COEK**
Protection degree IP67

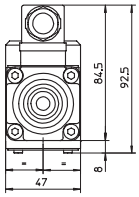
Lead Wire connection

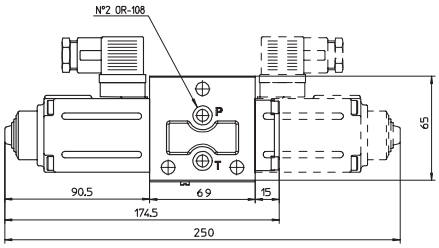


Option -XS
Coil type **COES**
Cable lenght = 180 mm

14 DIMENSIONS OF NHZO PROPORTIONAL VALVES

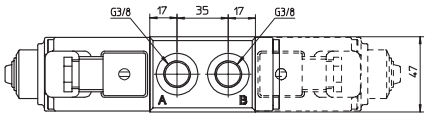


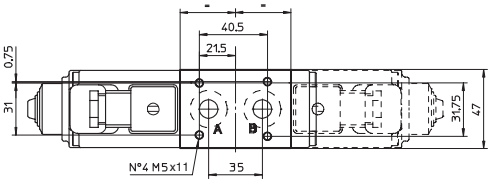


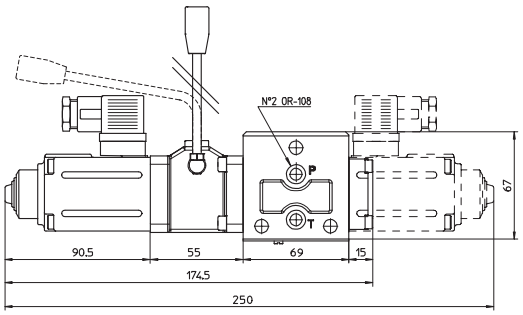


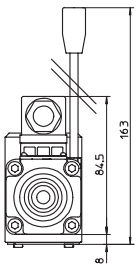
NHZO-05*
NHZO-07* (dotted line)

NHZO-05*/H
NHZO-07*/H (dotted line)

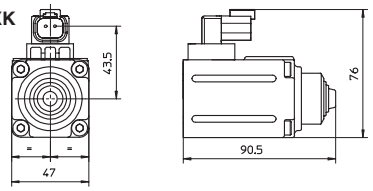




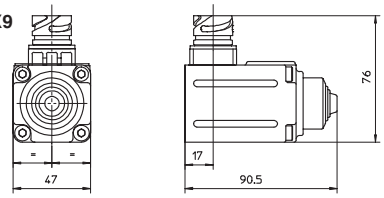




Option XK



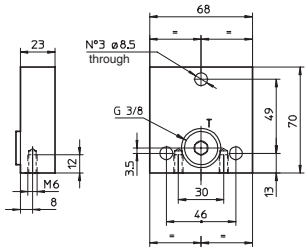
Option X9



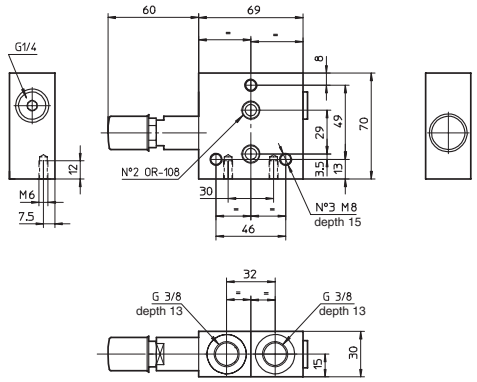
NHZO-05*/MV
NHZO-07*/MO (dotted line)

15 DIMENSIONS OF TOP COVERS

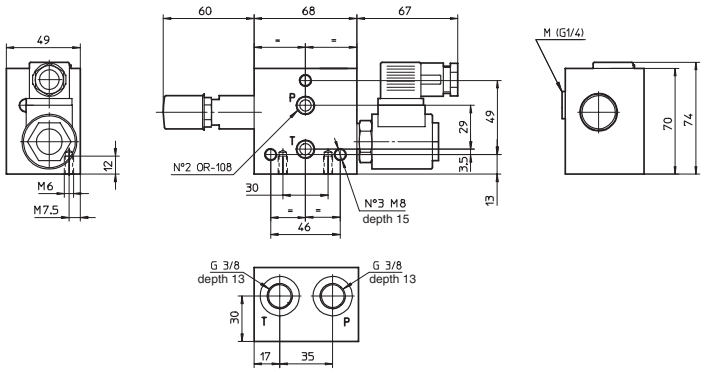
NB-00



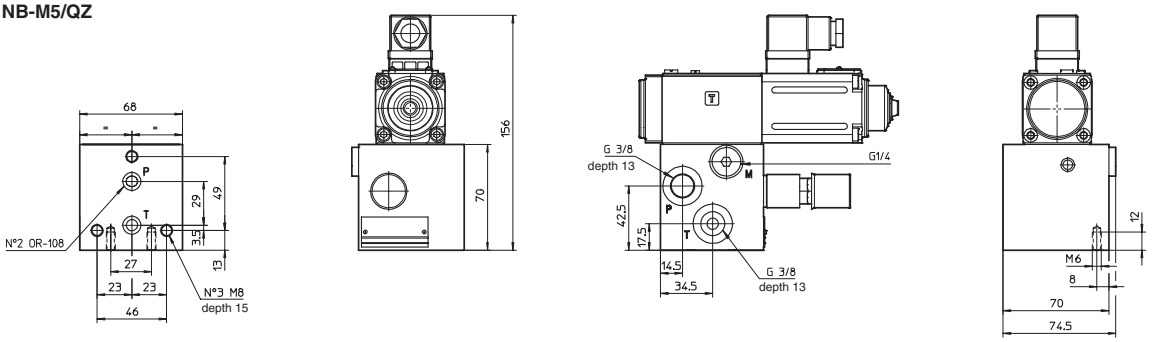
NB-M5



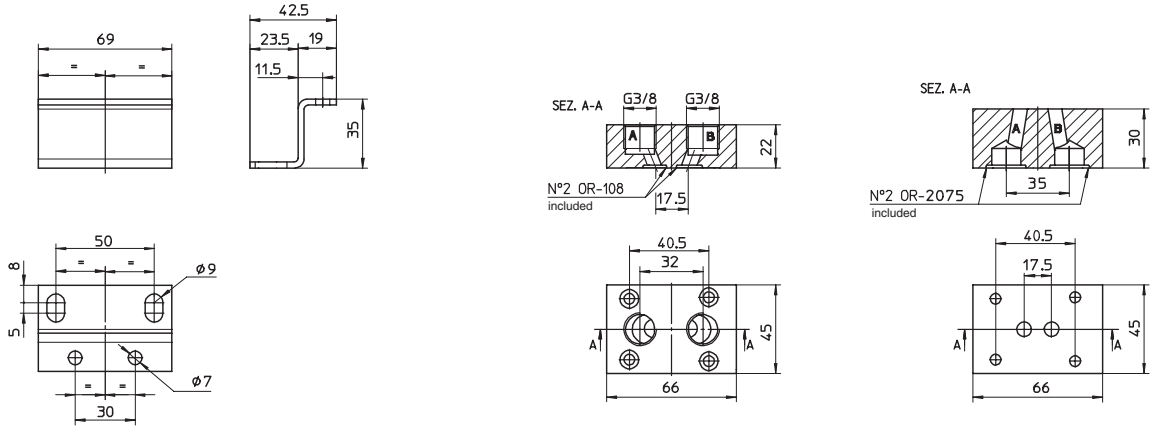
NB-M5/J



NB-M5/QZ



16 DIMENSIONS OF ACCESSORIES



MOUNTING BRAKETS
6-NB-100025

TOP PLATE
6-NHE-100016

INTERMEDIATE PLATE
6-NHE-100015

17 EXAMPLES OF ASSEMBLED GROUPS