



ADH7... 4/3 AND 4/2

PILOTED VALVES CETOP 7/NG16



1

Type ADH.7 distributors are intended for interrupting, inserting and diverting a hydraulic system flow. Normally these distributors are composed of a main stage, crossed by the circuit main flow, and of a pilot stage available in several versions.

Various types of controls are available, used either individually or in combination for, among other functions, stroke limitation and main spool movement speed control, in order to optimize the hydraulic system operation where this type of valve is employed.

In those cases where normally to drain spools are used, it is necessary to remember that the minimum changeover pressure due to the opposing springs is equal to approximately 5 bar (see the operating features table next pages) and it is consequently necessary to specify when ordering the check valve incorporated in the P line, if required (as shown below).

- Mounting surface in accordance with UNI ISO 4401 - 07 - 06 - 0 - 94 standard (ex CETOP R 35 H 4.2-4-07).
- Pilot operated spool, solenoid controller.
- Stroke control of main spool.
- Presetting for pressure reducing valve mounting.
- Presetting for single-acting throttle valve mounting.

ADH7...

STANDARD SPOOLS FOR ADH7	CH. I PAGE 58
TECH. SPECIFICATIONS ADH7...	CH. I PAGE 59
SUBPLATES BSH7...	CH. I PAGE 60
CETOP 3/NG06	CH. I PAGE 8
STANDARD SPOOLS FOR AD3E	CH. I PAGE 10
AD3E...	CH. I PAGE 11
ADC3...	CH. I PAGE 5
"A09" DC COILS	CH. I PAGE 7
"D15" DC COILS	CH. I PAGE 19
"B14" AC SOLENOIDS	CH. I PAGE 19
STANDARD CONNECTORS	CH. I PAGE 20

ORDERING CODE

ADH

Piloted valve - **Pilot valves and any modulating valves should be ordered separately**

7

CETOP 7/NG16

*

Mounting type (see next page)

**

Spool type (see next page)

*

Piloting and draining
I = X internal / Y internal
IE = X internal / Y external
EI = X external / Y internal
E = X external / Y external
 (see Tab.1 at side)

R

Check valve incorporated at port P (Tab. 2) Only for **I** and **IE** versions (omit if not required)

**

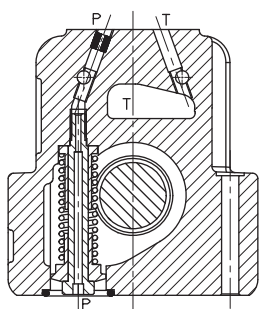
00 = No variant
LC = Main spool stroke limiter

2

Serial No.

TAB. 2 - INTERNAL CHECK ON P

ADH7*..R.**.2 VERSION**

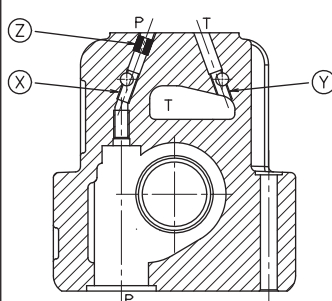


• For the spools 02-04-14-28 the piloting is normally external; the internal piloting is possible only with the internal check valve (R).

TAB.1 - PLUGS ARRANGEMENT FOR THE PILOT AND DRAIN LINES

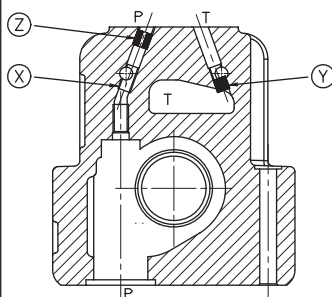
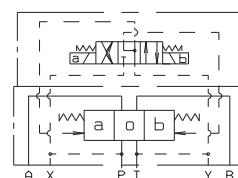
Plugs type used: M5x5 both for pilot and drain.

Note: standard M6x6 orifice Ø1,5 insert in the P port (Z)



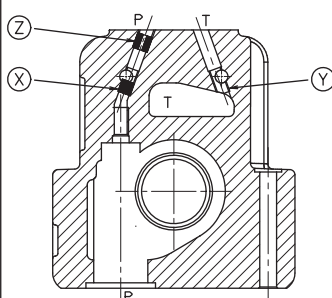
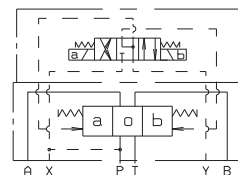
ADH.7...I

X internal piloting
 Y internal draining



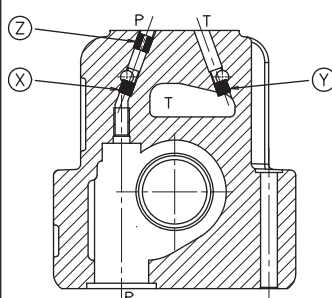
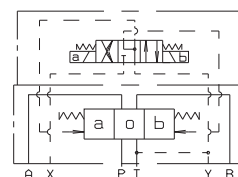
ADH.7...IE

X internal piloting
 Y external draining



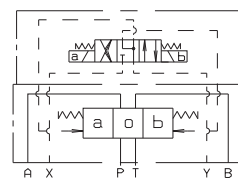
ADH.7...EI

X external piloting
 Y internal draining



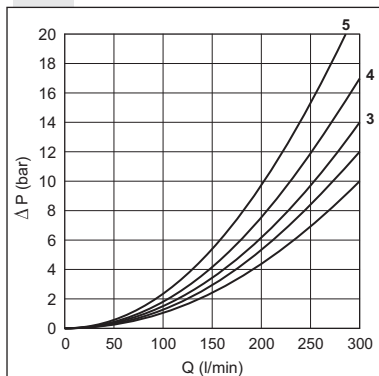
ADH.7...E

X external piloting
 Y external draining



1

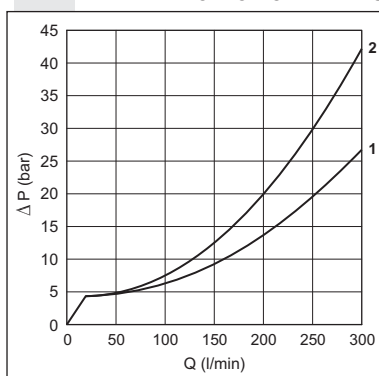
PRESSURE DROPS



The two diagrams show the "Pressure drops" in relation to spools adopted for normal usage (see table).

The fluid used was a mineral based oil with a viscosity of 46 mm²/s at 40° C.

PRESSURE DROPS FOR INTERNAL CHECK ON P VERSION



Spool type	Connections		
	P→A	P→B	P→T
02	1	1	1
04	1	1	2

Curve No.

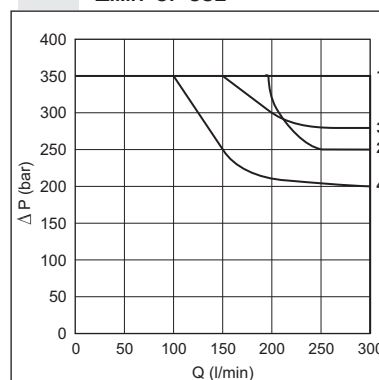
The limit of use test has been carried out with external draining and orifice Ø1,5 insert in the P port (Z). The fluid used was a mineral based oil with a viscosity of 46 mm²/s at 40° C.

(*) For the "E mounting" the locating spring works only with the steady system (* Spools with price increasing)

Spool type		Connections				
		P→A	P→B	A→T	B→T	P→T
01	ENERGIZING DE-ENERGIZ.	2	1	3	3	
02	ENERGIZING DE-ENERGIZ.	1	1	3	3	2
03	ENERGIZING DE-ENERGIZ.	2	1	3	3	
04	ENERGIZING DE-ENERGIZ.	2	2	4	4	5
05	ENERGIZING DE-ENERGIZ.	1	1	2	2	
66	ENERGIZING DE-ENERGIZ.	1	1	2	3	
10	ENERGIZING DE-ENERGIZ.	2	1	3	3	
14	ENERGIZING DE-ENERGIZ.	1	1	3	3	4
28	ENERGIZING DE-ENERGIZ.	1	1	3	3	4
23	ENERGIZING DE-ENERGIZ.	2	1	3	3	

Curve No.

LIMIT OF USE



Spool type	No. Curve
01	1
02	2
03	1
04	3
05	1
66	1
10	1
14	4
28	4
23	1

SPOOLS AND MOUNTING TYPE

	C mounting	A mounting	B mounting	E mounting (*)	P mounting
Pilot Piloted	AD3E03C... ADH7C...	AD3E03E... ADH7A...	AD3E03F... ADH7B...	AD3E16E... ADH7E...	AD3E16E / AD3E16F ADH7P...
Scheme					
Spool type					
01					
02					
03					
04*					
05					
66					
10*					
14*					
28*					
23*					

PILOT SOLENOID CONTROL VALVE SPECIFICATIONS

FOR DIFFERENT CONTROLS, PLEASE CONTACT OUR TECHNICAL ARON SERVICE

Max. operating pressure ports P/A/B	350 bar
Max. operating pressure port T (int. drainage)	160 bar
Max. operating pressure port T (ext. drainage)	250 bar
Max. piloting pressure	210 bar
Min. piloting pressure*	12 bar
Max flow	300 l/min.
Piloting oil volume for engagement 3 position valves	4 cm ³
Piloting oil volume for engagement 2 position valves	8 cm ³
Hydraulic fluid	mineral oil DIN 51524
Fluid viscosity	2.8 ÷ 380 mm ² /s
Fluid temperature	-20°C ÷ 70°C
Ambient temperature	-20°C ÷ 50°C
Max. contamination level	class 10 in accordance with NAS 1638 with filter $\beta_{25} \geq 75$
Weight ADH7 without pilot valve	7 Kg
Weight ADH7 with pilot valve with 1 AC solenoid	8,2 Kg
Weight ADH7 with pilot valve with 1 DC solenoid	8,4 Kg
Weight ADH7 with pilot valve with 2 AC solenoids	8,5 Kg
Weight ADH7 with pilot valve with 2 DC solenoids	9 Kg

Note: the solenoid valve type **ADC3E...** (with A09 coil) and **AD3E...** (with D15 or B14 coils) could be used both as pilote valve, without any changement of technical features.

* For valves with internal drain (Y), tank pressure on T must be added to min. piloting pressure.

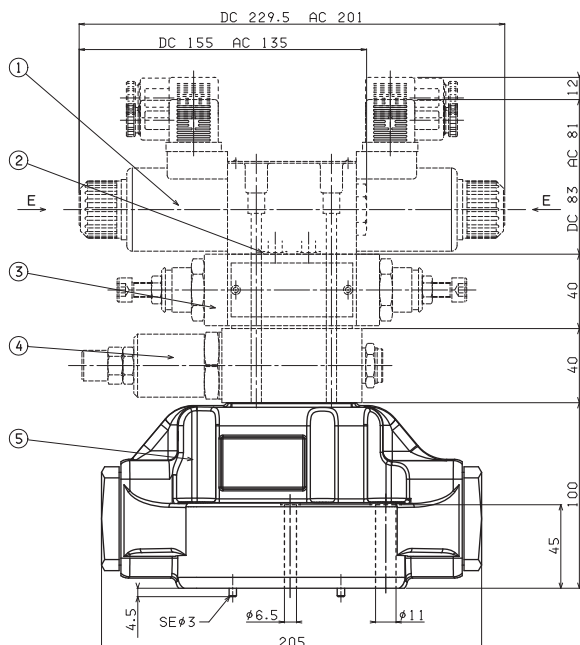
For version "R" with check valve on P, the cracking pressure of 5 bar is obtained with flow rate > 25 l/min.

Switching time

Such values refer to a tests carried out with Aron solenoid valve type AD3E03 with P = 100 bar pressure and Q = 100 l/min flow. Orifice $\phi 1.5$ mm, insert on piloting port, using a mineral oil at 40°C. with 46 mm²/s viscosity.

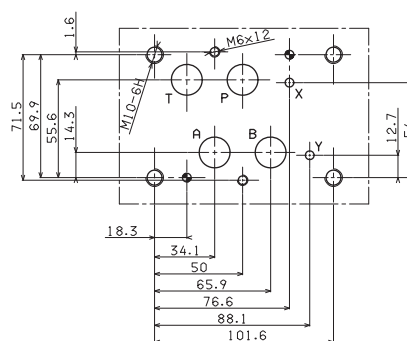
TEMPI DI RISPOSTA VALVOLA PILOTATA

Solenoids	ENERGIZING ±10% (ms)		DE-ENERGIZING ±10%(ms)		
No. Spool	01 - 03		01 - 03		
Scheme	2 positions	3 positions	2 positions	3 positions	
AC	50	20	25	30	
DC	70	35	40	50	
No. Spool	02	04	02 - 04	02 - 04	
Scheme	2 posit.	2 posit.	3 posit.	2 positions	3 positions
AC	35	60	30	25	25
DC	55	80	40	40	50



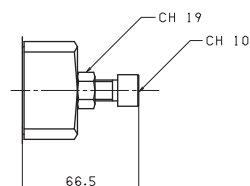
- 1 Piloted solenoid valve type **AD3E...** or **ADC3E...** CETOP 3/NG6
- 2 Calibrated diaphragms **AD3E...**
- 3 Flow regulation valve type **AM3QF..C**
- 4 Pressure reduction valve type **AM3RD..C**
- 5 Main valve type **ADH7..E**

CETOP 7 MOUNTING SURFACE



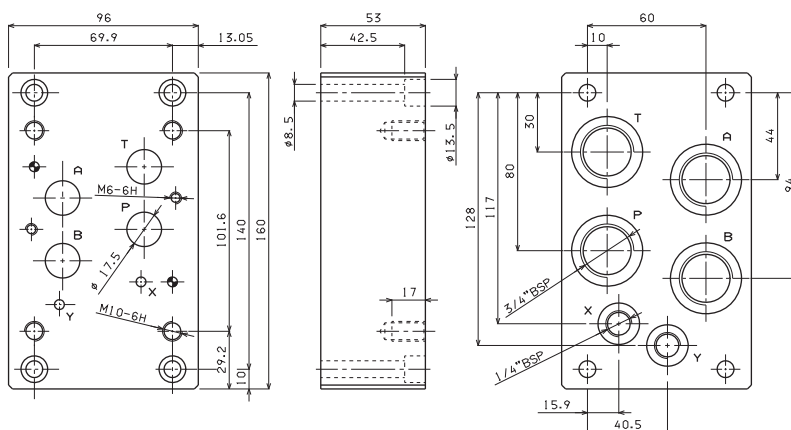
- Piloted valve fixing:
n° 4 screws T.C.E.I. M10x60 - Tightening torque 40 Nm
n° 2 screws T.C.E.I. M6x55 - Tightening torque 8 Nm
- Seals:
n° 4 OR 2-118 PARKER (type 130)
n° 2 OR 2-013 PARKER (type 2043)

SPOOL STROKE ADJUSTMENT



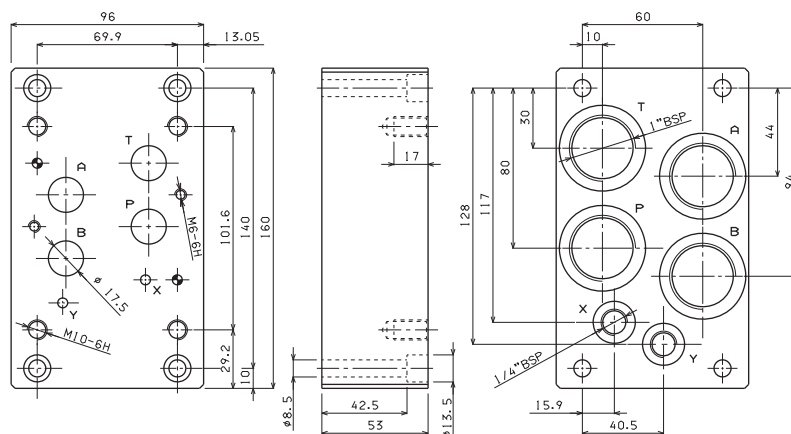
BSH	Single plate for piloted valve
7	CETOP 7/NG16
12	3/4" BSP rear connectors
00	No variant
1	Serial No.

Fixing screws M8x55 UNI 5931



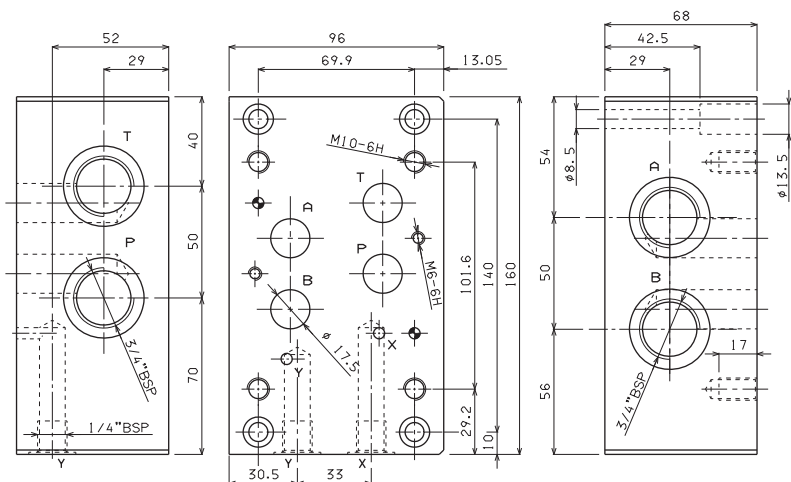
B5H	Single plate for piloted valve
7	CETOP 7/NG16
13	1" BSP rear connectors
00	No variant
1	Serial No.

Fixing screws M8x55 UNI 5931



BSH	Single plate for piloted valve
7	CETOP 7/NG16
14	3/4" BSP side connectors
00	No variant
1	Serial No.

Fixing screws M8x55 UNI 5931



BSH715 WITH P, T AND A, B SIDE 1" BSP**BSH**Single plate
for piloted valve**7**

CETOP 7/NG16

15

1" BSP side connectors

00

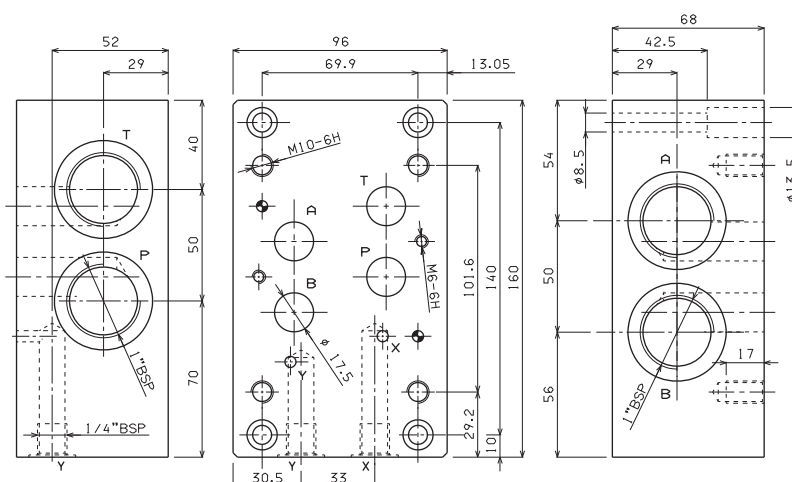
No variant

1

Serial No.

Weight: 6,3 Kg

Fixing screws M8x55 UNI 5931

**BSH716 WITH P AND T REAR, A AND B SIDE 3/4" BSP, X AND Y REAR****BSH**Single plate
for piloted valve**7**

CETOP 7/NG16

163/4" BSP rear and
side connectors**00**

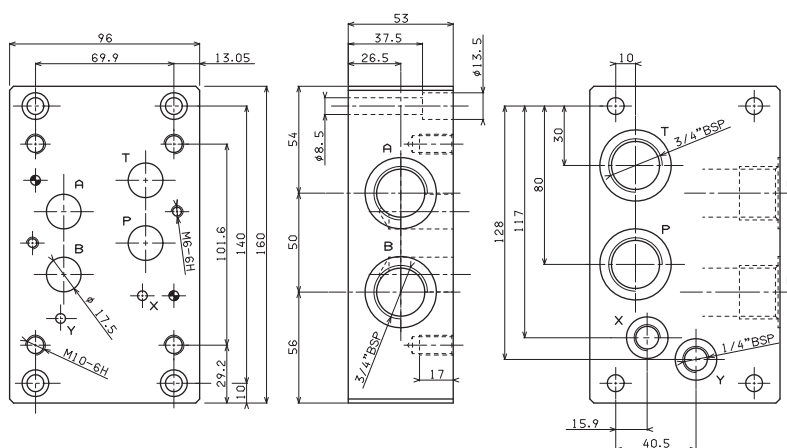
No variant

1

Serial No.

Weight: 5,1 Kg

Fixing screws M8x50 UNI 5931

**BSH717 WITH P AND T REAR, A AND B SIDE 1" BSP, X AND Y REAR****BSH**Single plate
for piloted valve**7**

CETOP 7/NG16

171" BSP rear and
side connectors**00**

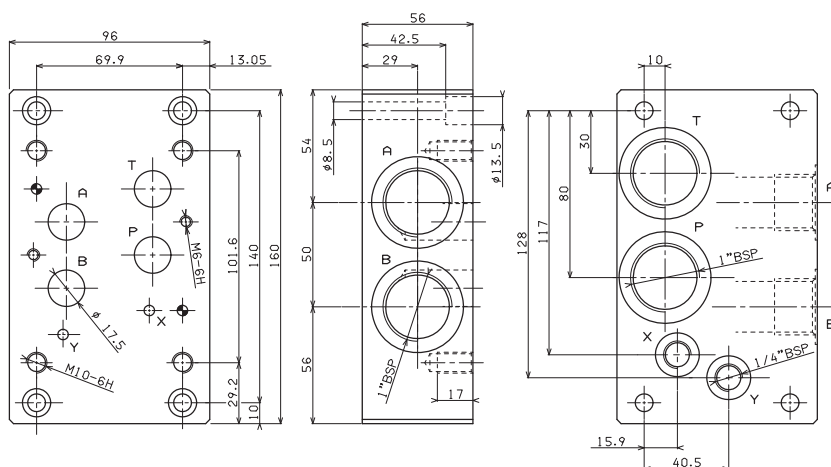
No variant

1

Serial No.

Weight: 5,3 Kg

Fixing screws M8x55 UNI 5931





ADH8...

STANDARD SPOOLS FOR ADH8	CH. I PAGE 63
TECH. SPECIFICATIONS ADH8...	CH. I PAGE 64
SUBPLATES BSH8...	CH. I PAGE 65
CETOP 3/NG06	CH. I PAGE 8
STANDARD SPOOLS FOR AD3E	CH. I PAGE 10
AD3E...	CH. I PAGE 11
"D15" DC COILS	CH. I PAGE 19
"B14" AC SOLENOIDS	CH. I PAGE 19
STANDARD CONNECTORS	CH. I PAGE 20

ORDERING CODE

ADH

Piloted valve
(**Pilot valves and any modulating valves should be ordered separately**)

8

CETOP 8/NG25

*

Mounting type (see next page)

**

Spool type (see next page)

*

Piloting and draining
I = X internal / Y internal
IE = X internal / Y external
EI = X external / Y internal
E = X external / Y external
 (see Tab.1 at side)

R

Check valve incorporated at port P
 - setting 5 bar (Tab. 2 below)
 Only for **I, IE** versions
 (Omit if not required)

**

00 = No variant
LC = Main spool stroke limiter

2

Serial No.

ADH8...4/3 AND 4/2

PILOTED VALVES CETOP 8/NG25



Type ADH.8 distributors are intended for interrupting, inserting and diverting a hydraulics system flow.

Normally these distributors are composed of a main stage, crossed by circuit main flow, and of a pilot stage available in several versions.

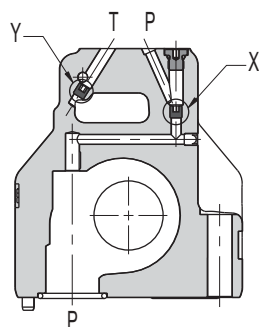
Various types of controls are available, used either individually or in combination for, among other functions, stroke limitation and main spool movement speed control, in order to optimize the hydraulic system operation where this type of valve is employed.

In those cases where normally to drain spools are used, it is necessary to remember that the minimum changeover pressure due to the opposing springs is equal to approximately 5 bar (see the operating features table next pages) and it is consequently necessary to specify when ordering the check valve incorporated in the P line, if required (as shown below).

- Mounting surface in accordance with UNI ISO 4401 - 08 - 07 - 0 - 94 standard (ex CETOP R 35 H 4.2-4-08).
- Pilot operated spool, solenoid controller.
- Stroke control of main spool.
- Presetting for pressure reducing valve mounting.
- Presetting for single-acting throttle valve mounting.

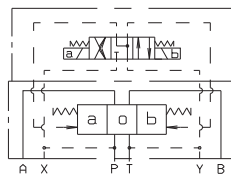
TAB.1 - PLUGS ARRANGEMENT FOR THE PILOT AND DRAIN LINES

Plugs type used: M6x6 both for pilot X and drain Y

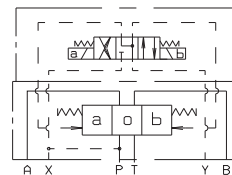


TIPO DI VALVOLA		Montaggio tappi	
		X	Y
ADH8---I	X internal piloting Y internal draining	NO	NO
ADH8---IE	X internal piloting Y external draining	NO	YES
ADH8---EI	X external piloting Y internal draining	YES	NO
ADH8---E	X external piloting Y external draining	YES	YES

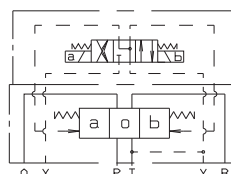
ADH8...I



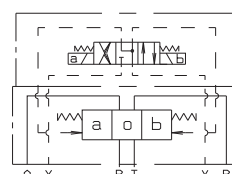
ADH8...IE



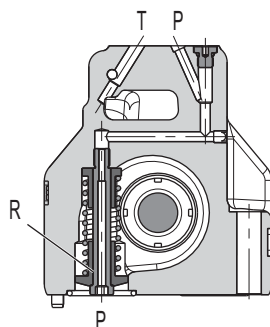
ADH8...EI



ADH8...E

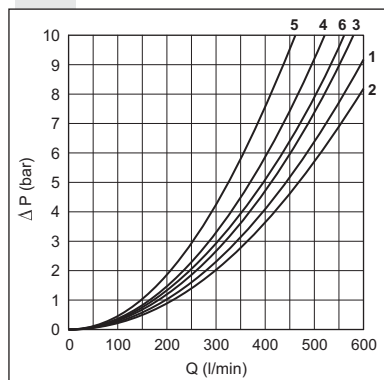


TAB. 2 - INTERNAL CHECK ON P



• For the spools 02-04-14-28 the piloting is normally external; the internal piloting is possible with the internal check valve (R).

PRESSURE DROPS



The diagram shows the pressure drops in relation to spools adopted for normal usage (see table).
The fluid used was a mineral based oil with a viscosity of 35 mm²/s at 50° C.

Spool type	Connections				
		P→A	P→B	A→T	B→T
01	ENERGIZING	1	1	2	3
02	DE-ENERGIZ. ENERGIZING	2	2	1	2
03	DE-ENERGIZ. ENERGIZING	1	1	4 ⁽²⁾	4 ⁽²⁾
04	DE-ENERGIZ. ENERGIZING	6	6	3	4
05	DE-ENERGIZ. ENERGIZING	4 ⁽²⁾	4 ⁽²⁾	2	3
66	DE-ENERGIZ. ENERGIZING	1	1	2	4
10	ENERGIZING	1	1	2	3
14	DE-ENERGIZ. ENERGIZING	6	6	3	4
28	DE-ENERGIZ. ENERGIZING	6	6	4	3
23	DE-ENERGIZ. ENERGIZING	1	4	2	3
		2			
Curve No.					
Notes: (1) A/B stopped - (2) B stopped - (3) A stopped					

SPOOLS AND MOUNTING TYPE

(*) For the E mounting the locating spring works only with the steady system

	C mounting	A mounting	B mounting	E mounting	P mounting
Pilot Piloted	AD3E03C... ADH8C...	AD3E03E... ADH8A...	AD3E03F... ADH8B...	AD3E16E... ADH8E...	AD3E16E / AD3E16F ADH8P...
Scheme					
Spool type	A X P T Y B	A X P T Y B	A X P T Y B	A X P T Y B	A X P T Y B
01					
02					
03					
04 ^(*) (**)					
05					
66					
10*					
14*					
28*					
23*					

(* SPOOLS WITH PRICE INCREASING)

(** THE SPOOL 04 IS AVAILABLE FOR OPERATING PRESSURES IN THE P/A/B LINES, MAX. 320 BAR)

PILOT SOLENOID CONTROL VALVE SPECIFICATIONS

FOR DIFFERENT CONTROLS, PLEASE CONTACT OUR TECHNICAL ARON SERVICE

Max. operating pressure ports P/A/B	420 bar
The spool 04 is available for operating pressures in the P/A/B lines	max. 320 bar
Max. operating pressure port T (int. drainage)	160 bar
Max. operating pressure port T (ext. drainage)	250 bar
Max. piloting pressure	350 bar
Max. piloting pressure with main spool stroke limiter (LC variant)	250 bar
Min. piloting pressure*	5 bar
Max. flow with 04-14-28 spools	500 l/min a 210 bar 450 l/min a 320 bar
Max. flow with all other spools	600 l/min a 210 bar 500 l/min a 320 bar
Piloting oil volume for engagement 3 position valves	11.1 cm ³
Piloting oil volume for engagement 2 position valves	22.12 cm ³
Hydraulic fluid	mineral oil DIN 51524
Fluid viscosity	2.8 ÷ 380 mm ² /s
Fluid temperature	-20°C ÷ 70°C
Ambient temperature	-20°C ÷ 50°C
Max. contamination level	class 10 in accordance with NAS 1638 with filter $\beta_{25} \geq 75$
Weight ADH8 without pilot valve	13,1 Kg
Weight ADH8 with pilot valve with 1 AC solenoid	14,3 Kg
Weight ADH8 with pilot valve with 1 DC solenoid	14,5 Kg
Weight ADH8 with pilot valve with 2 AC solenoids	14,6 Kg
Weight ADH8 with pilot valve with 2 DC solenoids	15,1 Kg

* For valves with internal drain (Y), tank pressure on T must be added to min. piloting pressure.
Min. piloting pressure is 5 bar with low flow rate, but it is up to 12 bar with higher flow rate.

For version "R" with check valve on P, the cracking pressure of 5 bar is obtained with flow rate > 25 l/min.

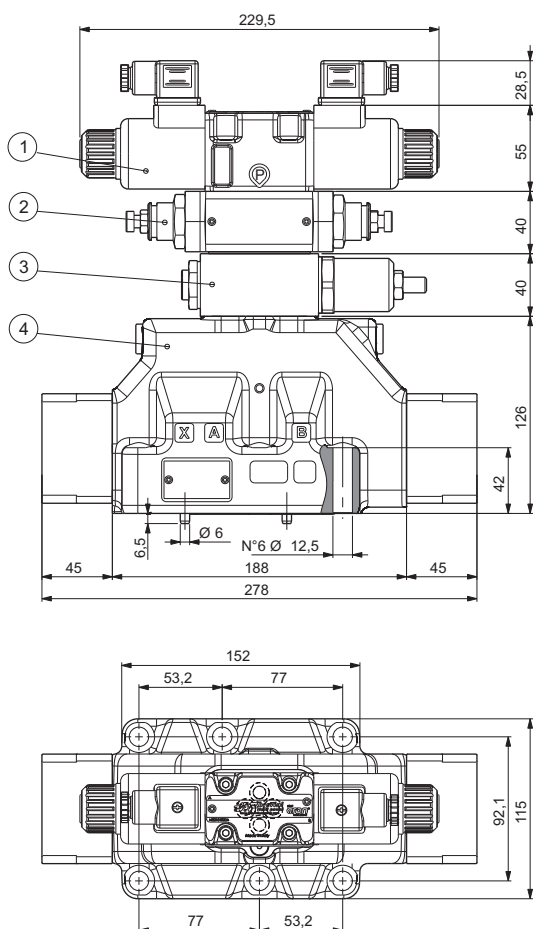
Switching time

Such values refer to a solenoid valve with P = 100 bar pressure using a mineral oil at 50°C with 36 mm²/sec viscosity PA and BT connections.

SWITCHING TIMES PILOTED VALVE

Solenoids	ENERGIZING ±10% (ms)		DE-ENERGIZING ±10% (ms)	
	2 posit.	3 posit.	2 posit.	3 posit.
AC	60	45	90	60
DC	75	55	90	60

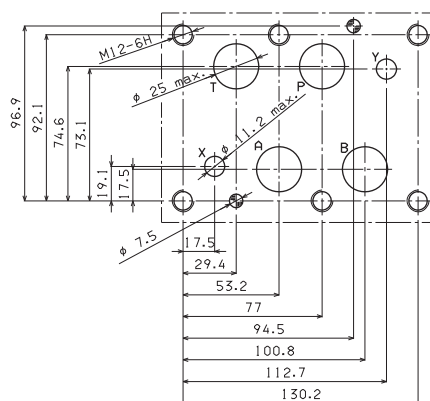
OVERALL DIMENSIONS



- 1 Piloted solenoid valve type **AD3E (CETOP3 NG6)**
- 2 Flow regulation valve type **AM3QF..C**
- 3 Pressure reduction valve type **AM3RD..C**
- 4 Main valve type **ADH8***

* The piloted valve is provided with a calibrated screw M6 with hole $\phi 1.5$, already mounted on the port "P".

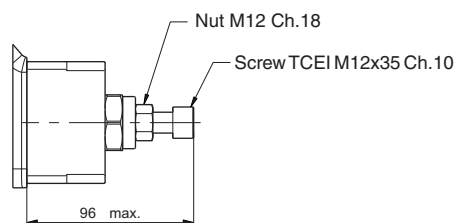
CETOP 8 MOUNTING SURFACE



- Piloted valve fixing: n° 6 screws T.C.E.I. M12x60
- Tightening torque: 115 Nm with screw Cl. 12.9**
69 Nm with screw Cl. 8.8

** Recommended for applications over 350 bar

- Seals: n°4 OR2-123/3118 type (29.82x2.62) - 90 Shore
n°2 OR2-117/3081 type (20.24x2.62) - 90 Shore



SPOOL STROKE ADJUSTMENT (LC variant)

